

DEFINING A COMBAT DECISION-MAKING PROCESS AT THE TACTICAL  
LEVEL OF WAR AND OPERATIONS OTHER THAN WAR

A thesis presented to the Faculty of the U.S. Army  
Command and General Staff College in partial  
fulfillment of the requirements for the  
degree

MASTER OF MILITARY ART AND SCIENCE

by

B. DON FARRIS II, MAJ, USA  
B.S., United States Military Academy,  
West Point, New York, 1983

Fort Leavenworth, Kansas  
1995

Approved for public release; distribution is unlimited.

19951011 045

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE 2 June 1995		3. REPORT TYPE AND DATES COVERED Master's Thesis, 2 Aug 94 - 2 Jun 95
4. TITLE AND SUBTITLE Defining a Combat Decision-Making Process at the Tactical Level of War and Operations Other Than War			5. FUNDING NUMBERS	
6. AUTHOR(S)  Major B. Don Farris, U.S. Army				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)  U.S. Army Command and General Staff College ATTN: ATZL-SWD-GD Fort Leavenworth, Kansas 66027-6900			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION/AVAILABILITY STATEMENT  Approved for public release, distribution is unlimited.			12b. DISTRIBUTION CODE  A	
13. ABSTRACT (Maximum 200 words) This study challenges the deliberate decision making process (DDMP) as ineffective for use by commanders in time-constrained environments. FM 101-5 (final draft), <u>Command and Control for Commanders and Staff</u> , 1995, currently prescribes DDMP as the only accepted process at the tactical level for both war and operations other than war. The researcher suggests a second, quicker, and more flexible doctrinal methodology to supplement DDMP when planning time is limited. DDMP relies on a traditional, analytical approach of generating and concurrently evaluating options allowing commanders to make an "optimal" decision. This study explores the existing theory and relevance of "satisficing." When planning time is limited, the initial course of action developed by the commander may prove more effective than one arrived at after the careful consideration of options. This theoretical approach provides the framework for a proposed combat decision making model. Using the doctrinal characteristics of an effective decision making process, both DDMP and the proposed model are compared. The study concludes that the proposed combat decision-making process should replace DDMP in fluid, time-constrained environments.				
14. SUBJECT TERMS Command & Control, Decision-Making, Deliberate, Planning Satisficing			15. NUMBER OF PAGES 154	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT Unlimited	

## GENERAL INSTRUCTIONS FOR COMPLETING SF 298

The Report Documentation Page (RDP) is used in announcing and cataloging reports. It is important that this information be consistent with the rest of the report, particularly the cover and title page. Instructions for filling in each block of the form follow. It is important to *stay within the lines* to meet optical scanning requirements.

**Block 1. Agency Use Only (Leave blank).**

**Block 2. Report Date.** Full publication date including day, month, and year, if available (e.g. 1 Jan 88). Must cite at least the year.

**Block 3. Type of Report and Dates Covered.** State whether report is interim, final, etc. If applicable, enter inclusive report dates (e.g. 10 Jun 87 - 30 Jun 88).

**Block 4. Title and Subtitle.** A title is taken from the part of the report that provides the most meaningful and complete information. When a report is prepared in more than one volume, repeat the primary title, add volume number, and include subtitle for the specific volume. On classified documents enter the title classification in parentheses.

**Block 5. Funding Numbers.** To include contract and grant numbers; may include program element number(s), project number(s), task number(s), and work unit number(s). Use the following labels:

<b>C</b> - Contract	<b>PR</b> - Project
<b>G</b> - Grant	<b>TA</b> - Task
<b>PE</b> - Program Element	<b>WU</b> - Work Unit Accession No.

**Block 6. Author(s).** Name(s) of person(s) responsible for writing the report, performing the research, or credited with the content of the report. If editor or compiler, this should follow the name(s).

**Block 7. Performing Organization Name(s) and Address(es).** Self-explanatory.

**Block 8. Performing Organization Report Number.** Enter the unique alphanumeric report number(s) assigned by the organization performing the report.

**Block 9. Sponsoring/Monitoring Agency Name(s) and Address(es).** Self-explanatory.

**Block 10. Sponsoring/Monitoring Agency Report Number.** (If known)

**Block 11. Supplementary Notes.** Enter information not included elsewhere such as: Prepared in cooperation with...; Trans. of...; To be published in.... When a report is revised, include a statement whether the new report supersedes or supplements the older report.

**Block 12a. Distribution/Availability Statement.** Denotes public availability or limitations. Cite any availability to the public. Enter additional limitations or special markings in all capitals (e.g. NOFORN, REL, ITAR).

**DOD** - See DoDD 5230.24, "Distribution Statements on Technical Documents."

**DOE** - See authorities.

**NASA** - See Handbook NHB 2200.2.

**NTIS** - Leave blank.

**Block 12b. Distribution Code.**

**DOD** - Leave blank.

**DOE** - Enter DOE distribution categories from the Standard Distribution for Unclassified Scientific and Technical Reports.

**NASA** - Leave blank.

**NTIS** - Leave blank.

**Block 13. Abstract.** Include a brief (*Maximum 200 words*) factual summary of the most significant information contained in the report.

**Block 14. Subject Terms.** Keywords or phrases identifying major subjects in the report.

**Block 15. Number of Pages.** Enter the total number of pages.

**Block 16. Price Code.** Enter appropriate price code (*NTIS only*).

**Blocks 17. - 19. Security Classifications.** Self-explanatory. Enter U.S. Security Classification in accordance with U.S. Security Regulations (i.e., UNCLASSIFIED). If form contains classified information, stamp classification on the top and bottom of the page.

**Block 20. Limitation of Abstract.** This block must be completed to assign a limitation to the abstract. Enter either UL (unlimited) or SAR (same as report). An entry in this block is necessary if the abstract is to be limited. If blank, the abstract is assumed to be unlimited.

DEFINING A COMBAT DECISION-MAKING PROCESS AT THE TACTICAL  
LEVEL OF WAR AND OPERATIONS OTHER THAN WAR

A thesis presented to the Faculty of the U.S. Army  
Command and General Staff College in partial  
fulfillment of the requirements for the  
degree

MASTER OF MILITARY ART AND SCIENCE

by

B. DON FARRIS II, MAJ, USA  
B.S., United States Military Academy,  
West Point, New York, 1983

Fort Leavenworth, Kansas  
1995

Approved for public release; distribution is unlimited.

MASTER OF MILITARY ART AND SCIENCE

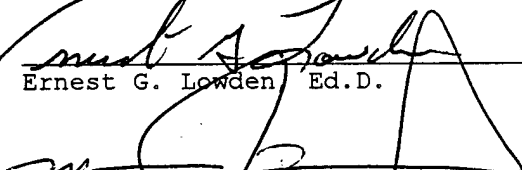
THESIS APPROVAL PAGE

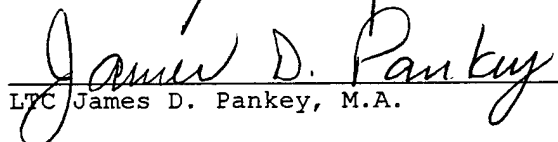
Name of Candidate: MAJOR B. DON FARRIS II

Thesis Title: Defining a Combat Decision-Making Process at the Tactical  
Level of War and Operations Other Than War

Approved by:

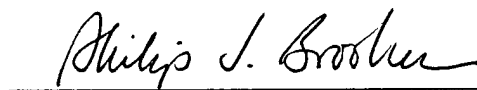
  
\_\_\_\_\_, Thesis Committee Chairman  
Ernest G. Lowden, Ed.D.

  
\_\_\_\_\_, Member  
COL Matthew B. Belford, M.B.A.

  
\_\_\_\_\_, Member  
LTC James D. Pankey, M.A.

Accession For	
NTIS GRA&I	<input checked="checked" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

Accepted this 2nd day of June 1995 by:

  
\_\_\_\_\_, Director, Graduate Degree  
Philip J. Brookes, Ph.D. Programs

The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

## ABSTRACT

DEFINING A COMBAT DECISION-MAKING PROCESS AT THE TACTICAL LEVEL OF WAR  
AND OPERATIONS OTHER THAN WAR by MAJ B. Don Farris II, USA, 147  
pages.

This study challenges the deliberate decision making process (DDMP) as ineffective for use by commanders in time-constrained environments. FM 101-5 (final draft), Command and Control for Commanders and Staff, 1995, currently prescribes DDMP as the only accepted process at the tactical level for both war and operations other than war. The researcher suggests a second, quicker and more flexible doctrinal methodology to supplement DDMP when planning time is limited.

DDMP relies on a traditional, analytical approach of generating and concurrently evaluating options allowing commanders to make an "optimal" decision. This study explores the existing theory and relevance of "satisficing." When planning time is limited, the initial course of action developed by the commander may prove more effective than one arrived at after the careful consideration of options. This theoretical approach provides the framework for a proposed combat decision making model. Using the doctrinal characteristics of an effective decision making process, both DDMP and the proposed model are compared. The study concludes that the proposed combat decision-making process should replace DDMP in fluid, time-constrained environments.

#### ACKNOWLEDGMENTS

To my wife, Tara, who's love, patience and encouragement made this work entirely possible.

To my MMAS Committee and the MMAS Staff, who answered a host of questions, kept me on azimuth, and who's advice and counsel proved invaluable throughout each phase of the process.

To the Observer/Controllers at the Joint Readiness Training Center, Fort Polk, Louisiana, who's tireless efforts continue to make the Army better prepared for the next fight.

# TABLE OF CONTENTS

	<u>Page</u>
APPROVAL PAGE . . . . .	ii
ABSTRACT . . . . .	iii
ACKNOWLEDGMENTS . . . . .	iv
LIST OF ILLUSTRATIONS . . . . .	vi
CHAPTER	
1. INTRODUCTION . . . . .	1
2. REVIEW OF LITERATURE . . . . .	12
3. A PROPOSED COMBAT DECISION MAKING PROCESS . . . . .	46
4. ANALYSIS . . . . .	68
5. CONCLUSIONS AND RECOMMENDATIONS . . . . .	102
APPENDIX. EXAMPLE OF BRIGADE STAFF BATTLE DRILLS . . . . .	110
BIBLIOGRAPHY . . . . .	144
INITIAL DISTRIBUTION LIST . . . . .	146

## LIST OF ILLUSTRATIONS

	<u>Page</u>
Figure 1. Annotated Steps of the Deliberate Decision Making Process . . . . .	2
Figure 2. Annotated Steps of the Proposed Combat Decision Making Model . . . . .	47
Figure 3. The Deliberate Decision Making Procedure . . . . .	49
Figure 4. Subordinate Commanders' Input Integrated Within the Proposed Combat Decision Making Model . . . . .	51
Figure 5. Commander's Course of Action Integrated Within the Proposed Combat Decision Making Model . . . . .	54
Figure 6. War Gaming and Synchronization Integrated Within the Proposed Combat Decision Making Model . . . . .	56
Figure 7. Targeting Integration Step Integrated Within the Proposed Combat Decision Making Model . . . . .	59
Figure 8. Commander's Confirmation Integrated Within the Proposed Combat Decision Making Model . . . . .	61
Figure 9. Execution and Continuous Assessment Integrated Within the Proposed Combat Decision Making Model . . . . .	63
Figure 10. Example of the Deliberate Decision Making Process . . . . .	71
Figure 11. Example of the Deliberate Decision Making Process . . . . .	75
Figure 12. Example of the Deliberate Decision Making Process . . . . .	82
Figure 13. Example of the Proposed Combat Decision Making Model . . . . .	83
Figure 14. Assigning Variables to the Deliberate Decision Making Process . . . . .	84
Figure 15. Assigning Variables to the Proposed Combat Decision Making Model . . . . .	84
Figure 16. The Proposed Combat Decision Making Model . . . . .	98
Figure 17. React to Enemy Ground Contact . . . . .	113
Figure 18. React to Enemy Indirect Fire (Q36 Drill) . . . . .	117

	<u>Page</u>
Figure 19. React to Enemy Military Intelligence Intercept . . . . .	121
Figure 20. React to Enemy Air Defense . . . . .	125
Figure 21. React to Enemy Logistics Site . . . . .	129
Figure 22. React to Air Threat . . . . .	133
Figure 23. React to Enemy Minefield . . . . .	137
Figure 24. React to Chemical Attack/Threat . . . . .	140

## CHAPTER ONE

### INTRODUCTION

*"A Poor Plan Executed On Time Is Far Better Than  
The Perfect Plan Executed Too Late!"*

*Old Military Maxim*

#### Background

Field Manual 101-5, Command and Control for Commanders and Staff, is the principal doctrinal tool used by the U.S. Army to teach, coach and train commanders and staff on the process of how to make effective decisions in combat. Since 1932, the Army has published nine versions of this manual.<sup>1</sup> With each subsequent revision, the United States Army's decision-making process continues to evolve. Today, a tenth version is currently under review by the Army's leadership in draft FM 101-5.<sup>2</sup>

In chapter four of draft FM 101-5, the doctrine describes only one decision-making process--the deliberate decision-making process (DDMP).<sup>3</sup> This single decision-making process is intended for application in any environment. In those situations where time is limited, a commander may modify or abbreviate the process as he deems appropriate.<sup>4</sup> Any abbreviation or modification of the process, however, must not arbitrarily skip any of the nine annotated steps.<sup>5</sup> These nine principle steps of the deliberate decision-making process as currently defined in draft FM 101-5 are shown in Figure 1 on the next page.<sup>6</sup>

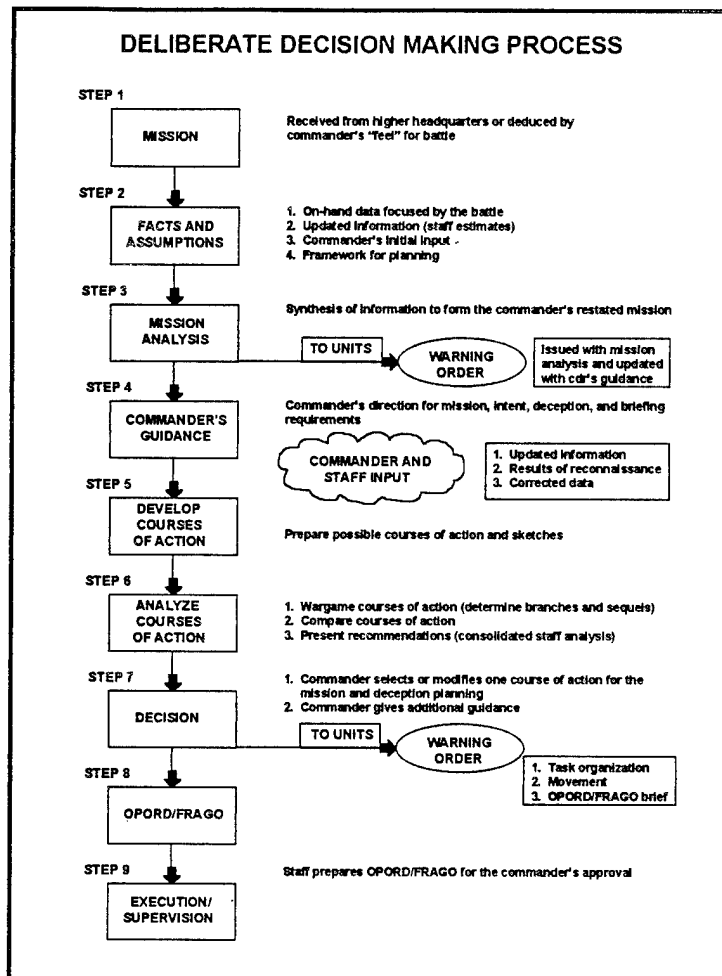


Fig. 1. Annotated Steps of the Deliberate Decision-Making Process extracted from ST 101-5, Command and Staff Decision Processes, pg I-2-5.

The recent advent of the Army's combat training centers (CTCs) and the Battle Command Training Program (BCTP) has placed great emphasis on training commanders and staffs to apply the deliberate decision-making process. The CTCs focus on planning, preparation, and execution at the brigade level and below, while BCTP focuses on planning and execution at the division and corps level using a computer simulation model. In each case, the participating commanders and their staffs are

exposed to the stressful and realistic conditions of decision-making in simulated combat conditions.

In the last several years numerous observations from the field, interviews, and empirical research have attempted to assess the Army's overall progress. Evidence exists to indicate that commanders and staff have difficulty applying the deliberate decision-making process both in combat and during training at the CTCs and BCTP. Whether this observed difficulty is due to training and experience of the participants or a flawed process continues to be hotly debated. Regardless of which side of the debate that leaders and researchers fall into, the vast majority do acknowledge that the "time available" to complete the process always remains crucial.

Applying any decision-making process is especially problematic in crisis, fluid or time-constrained environments. Draft FM 101-5 even accepts that there may be situations where it is impossible to use the current DDMP.<sup>7</sup> Again, when these situations occur, the commander is expected to abbreviate or accelerate the planning process as he deems necessary. Yet, beyond acknowledging that these situations will occur, doctrine does not offer any "detailed" discussion of how to effectively abbreviate the process, nor does it define any suitable alternatives.

Crisis, fluid, and time-constrained environments would seem to be realistic descriptions of the nature of combat. If the reader accepts this observation, either through personal experience or the experience of others, then the Army's doctrine may be lacking. It may not be advisable to train commanders and staffs on a single decision-making process that doctrine accepts in advance will not hold up in many

combat situations. If this assessment of the doctrine proves accurate, then a search for alternatives is both necessary and prudent.

The current field of research in military decision-making purports that two distinctly different cognitive strategies exist--optimizing and satisficing.<sup>8</sup> An "optimizing" strategy is considered the more traditional analytical approach and characterizes the current DDMP. All available information is used to generate conceptual possibilities that will solve a particular tactical problem. The decision maker concurrently evaluates all the generated options and selects what he believes to be the best solution. This "best" solution is considered the "optimal" choice under the given conditions.<sup>9</sup>

A "satisficing" strategy challenges the traditional analytical approach. Satisficing advocates that experienced decision makers do not generate or conceptualize numerous options and then evaluate them concurrently; especially in stressful, time-constrained environments. Satisficing theory states that a decision maker considers all available information, looks for certain informational queues within the given environment, and relies on his experience to generate a single option that satisfies the conditions. This first developed option is arrived at much quicker than an optimal approach that must wait for all options to be developed and evaluated before making a decision.<sup>10</sup>

If the current DDMP with its "optimizing" approach proves inadequate in time-constrained environments, then a "satisficing" approach may prove a suitable alternative. This thesis will explore this premise and attempt to present a second, more rapid "combat

decision-making process" that provides greater flexibility for commanders.

#### Problem Statement and Research Questions

The 1995 draft of FM 101-5, Command and Control for Commanders and Staff, describes a single decision-making process. The proposed draft doctrine also acknowledges that DDMP may become difficult or impossible to use in some time-constrained situations. If combat is often characterized by a lack of sufficient planning time, then the Army's doctrine may be inadequate if it does not address a sufficiently detailed alternative.

The primary research question to answer is this: Would an additional "combat decision-making process" significantly improve the ability of commanders and staffs to make decisions in time-constrained environments? To further amplify the primary research question, the following secondary research questions must also be addressed:

1. Is the current deliberate decision-making process too inflexible to meet the needs of commanders and staffs in time-constrained environments?
2. Does the proposed doctrine adequately address in sufficient detail how to abbreviate the current deliberate process to compensate when planning time is limited?
3. If the current deliberate process is too inflexible, what should substitute as an effective combat decision-making model, and under what conditions should it apply?

## Assumptions

1. For the purpose of comparative analysis, the best test of any decision-making process is under actual combat conditions involving numerous commanders and staffs. Obviously, this type of test of any proposed combat decision model is unfeasible.

2. The United States Army will continue to select commander's who are generally more experienced at decision-making than their staffs or subordinate commanders.

## Definition of Key Terms

The definitions used in this thesis are extracted from ST 101-5-1 (draft), Operational Terms and Symbols, and are as follows:<sup>11</sup>

Branch. A contingency plan or course of action (an option built into the basic plan/course of action) for changing the mission, disposition, orientation, or direction of movement of the force to aid success of the operation based on anticipated events, opportunities, or disruptions caused by enemy actions and reactions as determined during the war gaming process.

End State. A set of conditions which, when achieved, attain the aims set for the campaign or operation.

Fragmentary Order (FRAGO). An abbreviated form of an operations order (OPORD) that eliminates the need for restating information contained in a basic operation order. It may be issued in sections.

Operations Order (OPORD). A directive issued by a commander to subordinate commanders for effecting the coordinated execution of an operation.

Operations Other Than War (OOTW). Military activities during peacetime and conflict that do not necessarily involve armed clashes between two organized forces.

Sequel. Major operations which follow the current major operation. Plans for these are based on the possible outcomes - victory, stalemate, or defeat - associated with the current operation.

### Scope

The proposed combat decision-making process presented in this thesis is primarily designed for United States Army commanders and staffs operating at the tactical level of war and operations other than war--namely, corps and below. The proposed combat decision-making model does not attempt to address the operational or strategic level.

The commander's intuition, ability, and experience are very germane to the research question. No single process, no matter how effective, can ever hope to overcome the failure of a commander to correctly identify what is decisive and quantify it in terms of an attainable end state. The commander's ability to correctly identify the problem or desired end state is perhaps more "art" than "science." As such, the failure of a commander to correctly visualize the desired outcome should not then become an indictment on any combat decision-making process as either unsound or ineffective. This thesis will not attempt to address the commander's intuitive ability--only the process.

Additionally, perceived difficulties with the application of DDMP may indicate more than a flawed process. How the Army trains commanders and staffs on DDMP may present additional concerns.

Increased deployments and high personnel turnover during the Army's draw down can certainly have an impact and limit training opportunities. The current field of research may not clearly distinguish where problems with the process end and the training problems begin. Again, this thesis will not attempt to address the Army's training environment--only the process.

### Importance

The ability to make quicker and better decisions in combat has significant relevance to accomplishing future missions with fewer American lives lost. If the draft doctrine is incomplete, then efforts to supplement the Army's decision-making process in combat may prove extremely beneficial. The United States' recent involvement in Somalia and Haiti is a perfect example of how both the environment and end state can change with very little time to react or adjust the initial plan. Crisis, fluid, and time-constrained environments should be expected. This, in the author's opinion, is the most likely scenario that commanders and staffs will continue to find themselves in during the next several years.

### Methodology

The initial stage of this research project required finding sufficient evidence to support the author's opinion that a problem exists with the current deliberate decision-making model. The review of literature presented in chapter two focuses to the fullest extent on existing observations and empirical studies conducted by both military and civilian researchers. The observations and research are organized

into six separate categories and were collected in laboratory, classroom, garrison, and field settings using a variety of methods, structured interviews, and controlled experiments. Within the scope of cognitive human performance research, the inability to predict and limit the number of variables affecting a given outcome will remain elusive. As such, efforts to affix one or more specific factors to a documented reason for failure is subject to interpretation.

Additionally, there is a great deal of research and much is written about decision theory, but as it applies to military operations a relatively small amount is documented. An overwhelming majority of the research is conducted by the Army Research Institute at the behest of the Army's leadership. This may cause some to infer a slight bias in the available research. Army Research Institute (ARI) researchers, however, do tend to target perceived problem areas previously identified by leaders and the force as a whole. Despite the limited field of study, a sufficient quantity and quality of empirical research and observations do exist to provide evidence of a number of deficiencies in the current deliberate model.

Using the lessons of experience provided by the CTCs and building on the application of Recognition-Primed Decision Making,<sup>12</sup> discussed later in this thesis, the second stage of the research is to build a proposed combat decision-making model. Each step of the proposed model is presented along with a discussion of its importance, anticipated application, and how it differs significantly from the deliberate process. It is intended that the proposed combat decision-making model will provide sufficient detail for use by commanders and

staffs in lieu of the deliberate model. Any elements of the proposed combat decision model that remain unchanged from current doctrine are not reiterated for the sake of brevity.

The third stage of the research is a comparative analysis between the proposed combat model and the deliberate process. The analysis is organized into five categories: (1) a discussion of the two existing theoretical approaches to military decision-making; to include the Recognition-Primed Decision (RPD) methodology; (2) a comparative time analysis of the two models; (3) allowing for subordinate commanders' input; (4) the value of formalizing the targeting process within the decision model; and (5) a discussion on how the proposed combat decision model places greater emphasis on keeping the process continuous and cyclic--the importance of the execution step in combat decision-making.

### Endnotes

<sup>1</sup>Rex R. Michel, Historical Development of the Estimate of the Situation (Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1990), 1.

<sup>2</sup>U.S. Army, FM 101-5 (draft), Command and Control for Commanders and Staff (Washington, DC: Department of the Army, 1995).

<sup>3</sup>Ibid., 4-1.

<sup>4</sup>Ibid., 4-5 - 4-6.

<sup>5</sup>Ibid., 4-66.

<sup>6</sup>U.S. Army, ST 101-5, Command and Staff Decision Processes (Fort Leavenworth, KS: Command and General Staff College, 1993), I-2-5.

<sup>7</sup>FM 101-5, 4-65.

<sup>8</sup>Gary A. Klein and Roberta Calderwood, Investigations of Naturalistic Decision Making and the Recognition-Primed Decision Model, (Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1990).

<sup>9</sup>Ibid.

<sup>10</sup>Ibid.

<sup>11</sup>U.S. Army, ST 101-5-1 (final draft), Operational Terms and Symbols (Washington, DC: Department of the Army, 1995), 1-248.

<sup>12</sup>Klein and Calderwood.

## CHAPTER TWO

### REVIEW OF LITERATURE

An overview of the existing research on tactical planning process was recently completed in 1993 by Jon Fallensen of the Army Research Institute.<sup>1</sup> Using a modified version of his original format, this review of the literature on the tactical planning process is organized into seven categories: (1) historical perspective, (2) failure to follow procedures, (3) management of the process, (4) inflexible procedures, (5) excessive time demands, (6) formulation of alternatives, and (7) war gaming and synchronization.

Primary sources of the information available come from observations at the Combat Training Centers (CTCs), the Battle Command Training Program (BCTP), the Center for Army Lessons Learned (CALL), the Army Research Institute (ARI), after action surveys from DESERT STORM, the Army Battle Command Battle Lab, and a variety of independent studies from Horizons Technology, Institute for Defense Analyses (IDA), and the Rand Corporation. It should be noted that observations from the CTCs were not comprehensive, but assembled by CALL observers during two separate time periods. The first collection of observations were developed from the Army Lessons Learned Management Information System (ALLMIS) during 1986-1989. The second collection of observations were compiled by CALL observers during 1991-1992.

## Historical Perspective

Michel's (1990) research on the historical development of the estimate process points to the Prussian's as the first to develop a formal methodology to aid commanders in making decisions on the battlefield. This first attempt to provide a systematic and analytical approach to military problem solving continued to evolve in Europe until the early 1900's when it was first introduced at the Infantry and Cavalry School at Fort Leavenworth. By 1910, the United States Army adopted the estimate of the situation as official doctrine. Then, in 1940 the first FM 101-5, Staff Officer's Field Manual, the Staff and Combat Orders, was released using a five paragraph commander's estimate consisting of mission, situation and courses of action, analysis, comparison, and decision. Over the past 50 years, FM 101-5 has been revised a total of nine times, not including an unpublished draft in 1977. As of this date, FM 101-5 is currently being reviewed for its tenth formal revision.<sup>2</sup>

While the format for the estimate process has remained essentially the same since 1940, the practical procedures for its application has evolved considerably. Four specific areas surrounding the evolution of this process are germane to the literature review: (1) a mental versus written process; (2) who conducts the estimate; (3) the influence of time on completing the process; and (4) generating options for friendly courses of action.

Mental versus written process. The original estimate process was initially considered a mental process. Michel (1990) states:

Mention of procedures for performing the estimate was limited to considering the estimate steps as a "train of thought sequence"

in the 1932 version. In that first issue it was also mentioned that an estimate may be a purely mental (as opposed to written) exercise. In the 1940 version, this recognition was expanded to conclude that a "mental process" was the most common type of estimate at division level and below. This conclusion has been carried through every revision since then.<sup>3</sup>

While the original intent of the estimate process to serve as a "mental roadmap" remains unchallenged, the preeminence of the estimate process as a product-oriented methodology began primarily in the last decade with the publication of CGSC ST 100-9, The Command Estimate Process. This publication, until it was replaced in 1993 by CGSC ST 101-5, Command and Staff Decision Processes, served as the practical guide for training commanders and staffs throughout the Army.

While not official doctrine, CGSC ST 101-5 continues to serve as the accepted step-by-step application of the deliberate decision-making process. The inclusion of several written or drafted IPB (Intelligence Preparation of the Battlefield) products, the listing of specified/implicit/essential tasks, a written "restated" mission, the commander's written intent statement, COA sketches, COA statements, formal COA comparison, and the recent development of the synchronization matrix are examples of how the "written process" now overshadows the original "mental process."

Who conducts the estimate. Michel's (1990) research further highlights that the estimate process was originally designed for the exclusive use of commanders. Not until the 1950 version of FM 101-5 would the estimate process expand to encompass the staff. Ten years later in the 1960 version, the "military decision-making process" was first introduced and the staff began to retain primary responsibility for developing the overall estimate "for the commander." The

commander's own estimate was incorporated as a single step in the overall estimate process. Michel states:

This formal process places the commander's estimate within the broader context of all the command and staff actions required to develop and execute a course of action. . . . Thus, the delineation of this process helped make obvious the fact that the commanders' estimate is often an interactive undertaking in which his staff plays a very active part.<sup>4</sup>

Further steps were taken in the 1968 version to direct which members of the staff were responsible for each specific step in the estimate process. Michel records that this level of detail in the process was debated at the Command and General Staff College at great lengths:

The 1968 version made the first real effort to distinguish the responsibilities of the commander, G2 and G3 in the generation of possible courses of action, a problem that had been worked on at the Command and General Staff College for some time.<sup>5</sup>

Only the 1977 draft version differed from this specific breakdown of responsibilities for each staff member. Michel's research shows that this draft version, in sharp contrast to the earlier 1968 version, placed much of the actual mechanics of the decision process squarely back on the shoulders of the commander. The commander developed the courses of action and "mentally" war gamed each one. The necessity of making a decision within a time-constrained, combat environment was offered as the primary reason for keeping the decision effort with the commander. The focus of the estimate process with more detailed analysis was shifted back to the staff, however, when time permitted.

The influence of time. Throughout its development the impact of time on the estimate process also emerged as an issue, with the greatest emphasis occurring shortly after the Korean and Vietnam wars. During

World War II the estimate process does not mention the impact of time, perhaps largely because during this era it remained primarily a mental process. After the Korean War, however, the 1954 version of FM 101-5 makes mention of the necessity when time is limited to "combine" steps.

Michel states:

The post-Korean war 1954 release contains a unique procedural statement. In a paragraph entitled "Basic consideration" it is suggested that under certain circumstances an estimator might combine certain elements of the basic outline. This suggestion is not repeated in subsequent releases.<sup>6</sup>

Two revisions later and during the height of the Vietnam War the 1968 version contained a similar statement indicating the need for flexibility:

The 1968 manual also contained a caveat about using the estimate process that was somewhat like the one that appeared in 1954, but did not go quite as far. The statement was made that the format was not rigid. An estimator could go on to the next step without completing the preceding one or make several small excursions through the process within his overall estimate.<sup>7</sup>

The most notable mention of the effect of time on the estimate process occurs in the unpublished 1977 version. Less than five years after the Vietnam War, and presumably with input shaped by combat experience, the 1977 version took a radical departure from the existing doctrine. Michel states:

The 1977 draft viewed the commander's estimate as a much more dynamic, subjective and hurried process than any version before or since. . . . It viewed the structured steps in the commander's estimate and in the military decision-making process as fully applicable only when time was available, but typically "speed is the essence of the process in the fast-moving environment."<sup>8</sup>

This version, which apparently ran counter to the accepted viewpoints on the estimate process, was never adopted.

Generating options. The practice of developing multiple options, while fairly consistent in format, has certainly evolved in its application with each subsequent revision since 1932. A detailed description of how to develop multiple courses of action was not introduced until the 1940 version. This version provided the model that would be subsequently built upon in succeeding revisions, but provided two qualifying statements that would eventually disappear after the 1950 revision:

One was that if only one practical line of action seemed open to you, you could proceed directly to the decision. . . . The second was that, "as a general rule, not more than two or three own lines of action need to be carried forward for further analysis."<sup>9</sup>

The 1954 version further expanded the necessity of generating multiple options, and begrudgingly accepted the idea that generating a single course of action could suffice:

the commander in visualizing his possible courses of action . . . , "eliminates from further consideration those . . . which are obviously inferior to the others being considered." It contradicted the 1940 version in stating that although in certain circumstances there may be only one practical course of action, the final decision would not be made until that course of action is tested . . . to determine its "ramifications."<sup>10</sup>

The greatest emphasis on a detailed look at multiple options began in the 1968 version where the term "war gaming" was first applied to the process. This version listed eight products that should result from its detailed war gaming methodology. Most significant, however, were the instructions that the war gaming process would be repeated for each course of action considered. This monumental leap in both process and written requirements did not discuss the nature of the environment in which these deliberations would take place or the immediate

consideration of how time might influence the process. Thus, the 1968 version began the debate that largely continues today, by espousing the need for flexibility, yet advocating in the same document the need for a detailed, written wargaming of multiple options--an unprecedented requirement that certainly lengthened the process.

Michel further examines that since this 1968 version, there was a "leveling off" of the detail required in the process until the 1986 publication of CGSC ST 100-9. As mentioned earlier, this publication prescribes a significant increase in the formal products and written requirements necessary to complete the DDMP.<sup>11</sup>

Summary. Precisely why and what considerations weighed heavily on modifications to each subsequent revision of the estimate process is unknown. The United States Army does not have a method of recording the deliberations of each set of authors--only the finished doctrinal product. What does remain clear after nine revisions, and a tenth now in consideration, are the trends that have evolved. What began largely as a mental process solely oriented at commanders for achieving a battlefield solution has now evolved into a time intensive, staff driven process. It is interesting to note that shortly after the Korean and Vietnam Wars the greatest resurgence to make the commander principally responsible for the estimate process occurred. It is also important to observe that during these same periods the necessity for flexibility receives its greatest emphasis. Yet, at the height of the Vietnam War in the 1968 version, the decision-making process made its transition into a staff driven, product-oriented process that largely exists today in draft FM 101-5.

Vietnam, it should be observed, was the only conflict in American history to adopt a policy of rotating commanders every six months at the tactical level. Like the Prussians over 200 years ago, perhaps the perception of inexperience created its own safety net--more process. Just five years after Vietnam, and presumably after much soul searching from their combat experience, the authors of the 1977 draft version attempted to return the estimate process back to a commander oriented, cognitive process. A process that relied on the strength of an experienced commander and placed a premium on the quickest possible decisions under combat conditions. It was never adopted.

#### Failure to Follow Procedures

Observations at the CTCs and ARI studies provide evidence that the current DDMP is not routinely followed. In each case it was difficult to capture the exact reasons why commanders and staffs deviated from the prescribed doctrinal process. The dynamics of group behavior combined with an overwhelming variety of cognitive abilities undoubtedly preclude any researcher from isolating all the variables. One could argue that it is precisely this influence of so many variables that the need for greater flexibility in the process exists. The more often deviations from any process occur, the stronger the inference that the process may be inadequate.

Observations extracted from ALLMIS (1986-1989) by CALL analysts indicate that in 33 rotations at NTC, JRTC, and BCTP approximately one-third of the observations are directly attributed to a failure to follow the doctrinal planning process.<sup>12</sup> Further observations by battlefield

operating system compiled by CALL (1991-92) at the CTCs illustrate numerous problems with correctly following the process:

The ability of task force staffs to foresee events on the battlefield, through wargaming, is not understood or completed in sufficient detail. . . . IPB is not conducted to standard because the S2 is usually the only staff officer actively involved in its development.<sup>13</sup>

Performance trends from BCTP, also compiled by CALL (1992), further showed that 76 percent of the staffs did not develop viable plans or conduct parallel planning.<sup>14</sup>

Michel and Riedel (1988) investigated the effects of expertise and cognitive style in tactical decision-making problems by creating a simulated task of course of action development and evaluation at the division level. Using eight lieutenant colonels (experienced group) and eight CGSC students (novice group), each group was asked to develop separate concepts of operation for an offensive and a defensive mission. The purpose of this experiment was to investigate the differences in expertise, cognitive styles, and use of information between the two groups, and how each contributes to the decision-making process. The findings showed that neither test group felt confined by the doctrinal process:

Participants generally did not approach this problem with a definite schema in mind for solving it. There was a high degree of interest in the task but also there was evidence of some experimentation going on as suggested by participant statements like, "I know I'm suppose to do it X way, but I want to try Y." . . . The lack of standard schemas in determining a course of action might therefore be more indicative of battlefield decision-making than had we found a "lock step" use of data.<sup>15</sup>

Fallensen, Carter, et al. (1992) conducted a controlled experiment with fourteen pairs of experienced field-grade Army officers

in both a structured and unspecified procedures environment. Their purpose was to identify whether structured procedures, both with and without the aid of computers, led to better process or decision performance. They also examined the procedures the unspecified teams used to determine what and how much of the current doctrinal process would be considered. Part of their findings indicated that those officers conducting tactical planning in an unspecified environment frequently failed to follow the doctrinal process:

Unspecified teams did not perform the task as those teams who were required to follow the procedural estimate guidance. Unspecified teams left out steps, did not perform steps in as objective a manner as the structured teams, and repeated steps.<sup>16</sup>

Fallesen, Carter et al. (1992) concluded from their controlled experiment that there were numerous problems that led each group to deviate from the doctrinal approach. Perhaps the most revealing of these concerns discovered during discussions with the participants was the general belief that the current doctrinal procedures were not useful:

The application of a systematic approach is challenged by the complexity of the decision situations and procedures . . . and the potential for lack of belief in the usefulness of the procedures.<sup>17</sup>

Lussier, Sollick and Keene (1992) developed a group planning and resource problem called VARWARS to evaluate the progress of CAS<sup>3</sup> (Combined Armed Services Staff School) students at Fort Leavenworth and determine how effective course instructors were at teaching the decision-making process. A startling revelation of their study was that graduates, during the progress of the course, had somehow developed worse analytical skills as prescribed by the current doctrinal process

than those students who were just beginning the course. They found that perhaps one conclusion to explain this phenomenon was the students increased focus on specific parts of the process instead of the quality of the decision:

The major findings were that the graduates performed significantly worse than the entrants and that they did not use the problem solving techniques which they had been taught. . . . [A] possible explanation for the lower scores of the more advanced groups is that they are mistakenly emphasizing the wrong aspects of the problem.<sup>18</sup>

Halpin and Keene (1993) conducted a large and extensive survey of combat leaders following DESERT STORM on a variety of topics, one of which included the tactical planning process. Survey respondents included over 1864 officers (52% captains, 21% majors), 478 NCOs (including 111 Sergeants Major) and 58 warrant officers. The majority of the respondents were from division or lower echelons. Halpin and Keene reported that approximately 85% of those surveyed indicated that the current doctrinal procedures were adequate. However, there appeared to be a strong "minority viewpoint" that clearly defined the lack of usefulness of the process once combat operations began.<sup>19</sup> A sample of this viewpoint is provided by commanders at both company and battalion level:

No process was used after combat operations were initiated. Missions were initiated with immediate response required. Pre-combat estimate process was adequate.

Company Cdr<sup>20</sup>

The estimate process worked well during planning, but the speed of offensive operations forced me to analyze the situation with little input from other staff members and make a decision.

Battalion Cdr<sup>21</sup>

Grossman (1994) studied command and control of battalions and smaller units at the NTC. Grossman analyzed the THPs (Take Home Packages) of units that trained at the NTC in 1989 (just prior to DESERT STORM) and 1992 (the most recent), conducted in-field observations, administered surveys to participating units, and examined tape recordings of the task force command nets during preparation and execution. His findings found that a majority of the units fail because the task force staffs do not function well as a group or follow effective procedures to generate an adequate plan to defeat the OPFOR (opposing force). Synthesizing information, tracking and reporting critical information, and making good use of existing intelligence were also highlighted:

Task Force staffs have problems generating adequate plans, managing battle preparations, and influencing the execution of the battle. . . . Sixty-five percent of the plans generated by the TF commander and staff are inadequate.<sup>22</sup>

Summary. Observations at the CTCs, numerous independent studies, and survey responses from combat leaders indicate many examples where the current doctrinal process is not adhered to during practical application. Again, numerous outside factors may influence the ability of commanders and staff to stick to the stated doctrine; experience, level of training, team cohesion, and lack of time to name just a few. What does appear evident to researchers is that whatever the situation, whether actual combat, the CTCs or simulations, when the doctrinal decision-making process is put to the test, it rarely survives intact.

## Management of the Process

If empirical research suggests that commanders and staffs are not following the process, perhaps there is one variable that is easily observed--the commander and staffs' efforts to manage the process. Current doctrine is not precise in describing how the commander manages and controls his process. Doctrine places the commander's own estimate as a subset of the DDMP but provides little detail on how the commander "drives" the overall process. Either by default or because he coordinates the efforts of the staff, this role of managing the process currently falls to the chief of staff/executive officer. If aiding the commander to make a decision is the ultimate goal, then managing all the critical activities to its logical conclusion may be as important as the process itself.

At least one major ARI study, as well as observations from Desert Storm veterans, highlight the difficulty of managing the process. Thordsen, Galushka et al. (1990) conducted a knowledge elicitation study of military planning to primarily discover how often leaders make decisions without concurrently comparing options (a process defined as Recognition-Primed Decision Making (RPD)), but also to examine any observed failures in planning behaviors. The controlled experiment was conducted during a CPX at Fort Hood, Texas using observation, audio recording, mapping, and coding of RPD behaviors. Their efforts to document RPD behaviors were frustrated by the overriding observation that management of the overall process was very weak and staff members were easily distracted:

The management of the process would appear to be as critical as the actual planning itself. Military planners are specifically

trained to work with the domain specific knowledge but receive relatively little training in the management of the process. . . . Our analysis showed 64 major transitions between objectives of discussion during the five-hour planning session.<sup>23</sup>

Thordsen, Galushka et al. further observed that not only did distractions unhinge the staff planning on numerous occasions, but a lack of overall guidance and focus from the executive officers proved to be just as debilitating:

The battle managers we observed simply jumped into the process, started generating and evaluating options, and finished when they ran out of time. We did not see any attempts to manage the use of time. We did not observe anyone saying "we've got 5 hours here, and issues X, Y, and Z are the most important, so let's start with X but try to reach closure within 40 minutes."<sup>24</sup>

After observing this failure to manage the process Thordsen, Galushka et al. concluded that perhaps one of the biggest problems with the current process is an inability by those executing the process to stay focused on the task at hand. Whether the process itself causes battle staffs to become easily compartmented and distracted, or the obvious inability of executive officers to keep everyone focused on the end state, was difficult to determine. Thordsen, Galushka et al. found that whatever the reason, management of the process was a major consideration:

This emphasizes the need for the planners to fully understand exactly how the process unfolds, including all the distractions, pitfalls, and diversions. This is especially true if we want them to be able to manage this process as well as possible. Many of the distractions were subtle and they occurred without any verbalized awareness on the part of the planners, further handicapping the person responsible for managing the planning session.<sup>25</sup>

Management of the process also appears to have been a concern during DESERT STORM as evidenced by a sampling of survey responses in Halpin and Keene's report (1993):

When time was short the S-3 limited the options for wargaming thus reducing time to wargame.

Battalion XO<sup>26</sup>

We did what always is done but gets a "no go" at the NTC: the commander and S-3, assisted by the S2 and FSO on the fringe, built a plan and execution matrix as quickly as we could. There was only one course of action wargamed based on the Cdr and S3 having to work without an accurate Intel picture and no fire plan from above. We established our scheme of maneuver based on 2 days experience with the enemy and our knowledge of our own strengths and weaknesses.

Battalion Cdr<sup>27</sup>

Summary. If commanders and staffs are not following the procedures, then the obvious question is who should be responsible for managing the process and producing the products that ultimately aid the commander in making a decision. The current doctrine is vague and does not clearly explain how the commander "drives" his own decision-making process--he is only accountable for the end result. Although greater discussion is provided in draft FM 101-5, the chief of staff/executive officer remains largely responsible for managing the overall process. Minimizing distractors is a dynamic endemic to any team effort and does not mean that a given process is necessarily flawed. Yet, if training and experience play a big part in keeping the process focused, then perhaps researchers should ask if the executive officer is the best trained and most experienced individual to manage the process--or should it be the commander? Doctrine currently permits the commander to take only a nominal, if not entirely passive, approach to controlling "his" decision-making process.

### Inflexible Procedures

Failure to follow the process or manage all its activities can possibly be attributed to training and experience. Yet, when applied by the best trained and most experienced combat leaders any process is suspect if it is not practical for every situation. In order to be critical of the process the researcher must first draw a clear distinction between an inability to correctly apply the process or whether the process itself is flawed. ARI research and survey comments from battalion commanders in the field appear to support the supposition that the problems with the process are more than simple training and experience.

Brezovic et al. (1990) conducted a study of Armored Officer Basic students and instructors to identify the types of decision strategies used by individuals with varying levels of experience. 21 students and 9 instructors were examined during force-on-force training exercises. Subsequent interviews helped the researchers isolate 57 decision points to determine how each individual deliberated to make a decision. Brezovic et al. concluded that the prescriptive model used at higher echelons was not applicable at the tactical level because it did not allow for flexibility in time critical situations or address the necessity to make decisions when very little information is available:

One clear barrier to the uncritical adoption of a formal model to the tactical environment is the emphasis on identifying as many major problem dimensions as possible BEFORE executing any action. If this analysis were followed as typically described, the result could well be an untimely termination of command long before a response could be generated.<sup>28</sup>

Fallesen, Carter et al. (1992) in the same controlled experiment discussed earlier also concluded that the current doctrinal procedures

were inflexible. Their assessment was so strong as to infer that combat leaders under stress and running short of time do not use the current process--a serious indictment on any doctrine if it only applies in training. Any gains realized by the careful consideration of options and weighing of all available information before making a decision are quickly overshadowed by the complexity of the environment and a shortage of time:

It is likely that experts would not (and do not) tolerate a slow, rigid, and arduous process which might only show inconsequential differences in combat outcomes or with outcomes that are largely uncertain. . . . Using a decision analytic approach, as complicated as a weighted, multi-attribute utility matrix or as simple as summary columns of pluses and minuses, can be misleading for complex, dynamic tactical problems.<sup>29</sup>

Lussier and Litavec (1992) surveyed 48 battalion and squadron commanders returning from NTC, JRTC and/or DESERT STORM, 25 of which were graduates of TCDC (Tactical Commanders Development Course). Their primary goal was to assess the relative adequacy of the TCDC course, but closely tied to this evaluation was an assessment of the Army's deliberate decision-making process. Numerous respondents stated that the process was flawed and not applicable under combat or simulated combat conditions because it was too rigid, time consuming, and failed to show how or when to abbreviate steps:

If planning is being done during execution in a changing environment, the decision-making process must be abbreviated even further. This is a problem, commanders admit, with which they generally have not coped well. . . . Doctrinal publications teach a staff estimate process involving comparison of several courses of action. Add in briefbacks, wargaming, rehearsals, execution matrix, etc. and there is too much for the commander and staff to do. All these techniques need to be carefully considered. Doctrine should provide a standard timeline describing what must be done and what can be dropped, including some guidelines on how much time should be spent on each product or activity.<sup>30</sup>

Summary. Researchers and comments from the field suggest that the current prescriptive decision model as described by doctrine is lacking. Fallesen (1993) summarizes that the traditional viewpoint is that the process is acceptable, but needs to be performed faster and more efficiently.<sup>31</sup> Admittedly, it is difficult for military theorists to completely dismiss an analytic approach to solving complex tactical problems. Afterall, this approach has evolved over 50 years and is firmly entrenched in the mindset of Army leaders. Yet, research suggests that perhaps change is required. In any basic problem solving format an individual or team must still gather the facts, determine the problem, consider the variables that affect the outcome, and then make a decision. This is the essence of any decision-making process. Perhaps the issue then becomes what part of the process is the most important, and what can it be streamlined without removing any basic elements that logic demands. Better training and more cohesion may fix some of the problem, but this still does not address the doctrinal problem of a lockstep methodology unsuited for time-constrained environments. Success will demand greater flexibility and doctrine does not address in sufficient detail how to effectively abbreviate the process.

#### Excessive Time Demands

Closely tied to observations that our current doctrinal procedures are inflexible is the major impact that time has in every tactical situation. Often, time is attributed throughout history as the single most decisive factor that determined victory or defeat. Naturally, in any violent contest between opposing forces, with all

things fairly equal, that side which makes "quality" decisions quicker will have a distinct advantage. A common tenet espoused throughout the Army is "A poor plan executed on time is always better than a perfect plan executed too late!" Certainly this lesson of history did not evolve without impetus. Perhaps experience has taught commanders that action counts more than making the "best" decision, and if that is true, then time is definitely an ally.

Thordsen, Klein, Michel, and Sullivan (1991) examined a class of 62 students in Advanced Warfighting, at the U.S. Army's Command and General Staff College (CGSC). The researchers observed student planning cells during three separate planning exercises and specifically focused on ten distinct categories using knowledge elicitation methods to assess decision-making behavior. The primary goal was to determine if their knowledge elicitation methods could be used in future training exercises to provide commanders and staffs after-action feedback of planning scenarios. During the course they also reached numerous conclusions on student behavior during application of the current doctrinal decision-making procedures. Students had difficulty making decisions in a timely manner. The researchers found that this was due to the students impulse to seek the "perfect" plan rather than make a timely decision not necessarily supported by all the available information:

It is very easy to be overtaken by events when the planning cell is not looking far enough ahead. This can be tricky, because the natural inclination is to wait until you have all the information necessary to make a relatively risk free plan.<sup>32</sup>

Fallesen, Lussier, and Michel (1992) documented known empirical research on the command and control process to provide lessons learned

for CGSC instructors to improve the process as it is taught in the classroom. They reviewed numerous sources, from simulations to field observations, and concluded that much of the planning time is wasted by battle staffs during the attempt to generate and evaluate options. What their research discovered was that most battle staffs do not develop separate and distinct courses of action for comparison and evaluation, but instead place most of their emphasis on what they "believe" to be the best option and give little credibility to the other options. The other options are only developed because current doctrinal procedures require it and time constraints did not allow for a equal consideration to each option:

The traditional estimate process addresses the preparation of multiple courses of action (given enough time), analyzing each independently, comparing the results, and only then selecting an option. But today's battlefield will rarely provide enough time to fully develop multiple courses of action. Planning and preparation time can easily be wasted by spending too much time on "throw-away" options, at the risk of acting too late and losing the initiative.<sup>33</sup>

Lussier and Litavec's (1992) survey of battalion and squadron commanders found that time was the overriding factor to most, if not all the commanders when applying the deliberate decision-making process. Across the board, their responses indicated a general dissatisfaction with the current procedures and their inability to abbreviate the process:

Almost all commanders were adamant that the Army's decision-making process was too ponderous for use in limited time situations, and to attempt to use this process in those situations was a mistake. The process was workable and beneficial in the Desert Shield preparation phase; however one Desert Storm began, it was not.<sup>34</sup>

Commanders distinguish two situations: limited time situations, with only a few hours of planning time available, and execution situations, where mission planning is occurring at the same time as execution. In the latter case, the changing tactical environment makes the doctrinal decision-making process even less applicable. Commanders know they must truncate the process. Most commanders believe they are not given much doctrinal help in doing that truncation.<sup>35</sup>

Halpin and Keene's (1993) survey of the combat leaders returning from DESERT STORM found similar responses concerning the practical application of the current doctrine in time constrained environments:

There were times when the situation just didn't allow for big planning sessions--leaders should receive more training for this in [the] advance courses!

Battalion FSO<sup>36</sup>

As the battlefield became more fluid, short notice FRAGOs became the norm. Execution details were worked out as the mission developed. Overall, the staffs responded well to the flexible situation.

Assistant S-3<sup>37</sup>

Corps plans were not timely, forcing Division to jump through a hoop in order to execute; 1/3 - 2/3 rule became 7/8 - 1/8.

LTC, LNO<sup>38</sup>

Too fast paced operations. The 1/3 - 2/3 rule for planning was not applied at Bde level. This impacted on planning/prep time at Bn & Btry level.

Battalion Cdr<sup>39</sup>

Summary. The overwhelming conclusion from researchers and combat leaders is that time is critical in the planning process, and the current process is too ponderous to apply in complex and stressful tactical situations. If for no other reason than to prevent combat leaders from arbitrarily dismissing the entire process out of frustration, the exact opposite effect desired of any decision model, doctrine must prescribe how to effectively abbreviate the process.

### Formulation of Alternatives

Conventional decision-making theory focuses on selecting the "best" option that provides the maximum result with the minimum cost. Selecting that "best" option is routinely discussed relevant to available information and not in respect to time constraints. However, recent theorists have started to explore a concept, called "Naturalistic Decision Making", that focuses on selecting a "feasible" option that satisfies the problem based on time available, information queues, and the expertise of the decision maker. The assertion is that decision makers, operating in cognitive domains that are familiar, will recognize critical elements of information based on experience, which leads them in turn to select a feasible option to fit the situation. The key is experience. The more experienced the decision maker, the better the decision.

Recent research indicates that in tactical environments the decisions made using a "Naturalistic" approach have no less impact on the outcome than the traditional theory of generating and selecting the "best" option. In either case, within the tactical environment, the commander who is making the decision is still influenced by recognizable information queues. If the assumption is made that the commander is the most experienced decision maker, then the "committee approach" by the staff to generate viable options will not significantly influence what the commander, through his experience, recognizes as his first and most feasible option. Waiting for the staff to generate those options before the commander makes a decision, however, is time consuming.

Naturalistic decision theory advocates skipping this step. In a tactical situation the commander's "gut" call, based on his experience and available information, will still probably be the "best" option--but the decision is arrived at much faster.

Klein and Calderwood (1990) reviewed three years of research concerned with how experienced personnel make decisions in operational settings characterized by real-time information processing, shifting goals, and high-risk consequences. The actual study domains selected were determined to correlate to general military decision-making, these included urban fire ground commanders, wildland fire incident commanders, and U.S. Army tank platoon leaders. A large part of their review presents current theoretical thinking which now opposes earlier views on serial generation:

The work of Simon (1955) is probably the best known discussion of a serial generation and evaluation strategy in the behavioral science literature. Simon described the use of satisficing as a means of quickly and efficiently finding an effective option. Satisficing is a process by which choices are evaluated one at a time until a satisfactory one is found, and then implemented. It differs from an optimization strategy in which virtually all options have to be generated and evaluated in order to determine which is best.<sup>40</sup>

Klein and Calderwood (1990) thus concluded:

Should Proficient Decision Makers Generate as Many Options as Possible? From the perspective of recognitional decision-making, the answer is "No."

This recommendation is heard from both decision researchers (e.g., Gettys, 1983) and practitioners writing popular books and articles (e.g., Janis & Mann, 1977). In the time-pressured environments we studied, there simply was not enough time to follow such advice. It takes time to generate and evaluate options, and delays may be intolerable. In addition, the situation may shift during the analyses so that the whole process has to start over again. Even in the absence of time pressure we rarely observed proficient decision makers trying to generate large sets of options.<sup>41</sup>

Geva (1988) studied three combat decision situations during the second and third days of the Yom Kippur War in the Suez Canal region. He interviewed commanders at every echelon from division to battalion and reviewed numerous other printed sources in an effort to assess how decisions were made under the stress of combat. With only one exception, Geva determined that those commanders examined did not generate and concurrently compare options before making a decision as doctrine allowed. The Israeli commanders usually selected the first course of action generated. Geva asserted that in most cases experience led the commanders to believe that the first course of action developed would ultimately be the best decision:

In three cases there were indications of more than one alternative course of action. Only in the second case the alternatives were compared prior to casting the decision. In all other cases, the first raised alternative was adopted as the decision. Other alternatives emerged subsequently, either when the original alternative was reported or perceived unfeasible.<sup>42</sup>

As previously mentioned, Brezovic et al.'s (1990) research involving the armor platoon leaders in the basic course at Fort Knox appears to support Geva's observations:

We have found a preponderance of cases where the decision maker relies on situational awareness, that is, the ability to immediately ascertain the important features of a decision situation and to derive the appropriate implications.<sup>43</sup>

Brezovic et al. (1990) reviewed the reaction of these young armor platoon leaders making decisions in combat simulated environments and concluded:

The conclusion one draws from these few accounts of military command in action is that there is little place for the careful reasoned approach, insensitive to time, that has been proposed as the model for human decision-making. On the contrary, an inappropriate emphasis on the generation of options over the search

for patterns in the decision environment seems a clear prescription for disaster.<sup>44</sup>

Also previously discussed in this review, Thordsen, Galushka et al. (1990) in their knowledge elicitation study of military planning observed a very distinct difference between what U.S. Army doctrine advocates and what is believed by some to actually occur in practical situations:

We have shown (Klein, Calderwood, & Clinton-Cirocco, 1986; Klein, in press) that "experts" in natural decision-making settings operating under various levels of time pressure and stress do not follow the classical decision process. These individuals have been shown to approach the decision-making process by addressing one single option at a time. Often this involves making an automatic decision, with little if any deliberation. When multiple option deliberation does occur, it tends to be along serial, rather than concurrent, lines.<sup>45</sup>

Thordsen, Galushka et al. (1990) further concluded in their study that decisions made by their control groups were performed without generating and concurrently evaluating options as U.S. Army doctrine suggests:

We found 96 percent of the identified decisions (26 out of 27) were RPDs where there was no concurrent deliberation. That is, multi-attribute weighting of options, decision analysis and/or Bayesian strategies did not come into play.<sup>46</sup>

Lussier, Solick, and Keene (1992) observations, using the VARWARS model also previously discussed, reached very similar conclusions:

Neither entrants nor graduates followed the method taught, as only one group proposed more than one adequate alternative, and that group failed to complete the process by analyzing both alternatives. The primary process of problem solving employed by both types of groups was to develop a single solution, modifying it as necessary and rejecting it only if it became completely unworkable.<sup>47</sup>

Fallesen, Lussier et al. (1992) in their collaborative effort to discuss the tactical command and control process strongly felt that arriving at an early decision, without consideration of options, actually offered practical advantages that outweighed the negligible benefit of comparing similar courses of action:

When is one course of action enough? Each tactical situation is unique. In some cases, the number of feasible options is limited, or a single "best" option may be apparent to the experienced decision maker. In other cases, several distinct options may be feasible, but in the commander's judgment they are so close in value that it is not worth the time and effort required to determine which is "best." In any case, time constraints may make the analysis of several options impractical. In these instances, it is best to quickly arrive at a preferred course of action. This gives maximum time to the staff and to subordinate commands for the planning, coordination, and rehearsal that is essential for the accomplishment of any course of action.<sup>48</sup>

Summary. Because a significant criticism of the current process is the amount of time required to complete all the steps, a large part of the current research advocates a reduced emphasis, if not the complete elimination of, the concurrent evaluation of separate courses of action prior to the commander's decision. Some evidence indicates that on those occasions when staffs have considered separate options, those same options are generally so similar that little benefit was gained by the effort. As a rule, observations on the process tend to support the trend that the first option considered and developed is generally the "best" option anyway. Most of the time staffs developed other options only to satisfy the requirements of the process and never seriously considered the remaining options as a potential solution. RPD theory would also seem to support this observation. Experience, more so than the careful consideration of numerous options, appears to be the

real measurement of the quality of a decision. The more experienced the commander and his staff, the better the decision. Concurrent evaluation of separate courses of action using a weighted, multi-attribute utility analysis does not necessarily improve the quality of the decision.

#### Wargaming and Synchronization

Current research also supports the observation that wargaming and synchronization are not performed well. If no plan survives intact after combat begins, then prudent commanders and staffs should consider the impact of possible branches and sequels to the original course of action. Researchers and commanders in the field observe that despite the importance of this step this is rarely achieved to satisfaction. Several reasons are presented to explain this deficiency which include a lack of experience, too little time, too much focus on picking the best option, and the staff becoming too enamored with the synchronization matrix.

Fallesen and Michel (1991) observed a recent BCTP warfighter exercise to provide observations on the practical application of the deliberate planning process at the corps, division, and brigade level. The subjects of the research were CGSC students and not actual unit leadership, so the test group actually negated the benefits normally gained by experienced decision makers executing the process. The researchers were able to observe a large test group recently schooled in the process, but who generally lacked the experience and would be less inclined to deviate from any formal steps in the process. As such, the researchers gained considerable benefit by observing what they felt

would be a more rigid application of the process. Fallesen and Michel observed:

The students gave very little thought to how the initial plans could go wrong. They were never observed considering branches in either enemy actions or their own actions. . . . There was very little detailed war gaming. War gaming did not involve quantitative estimates of relative combat power, identification of critical events, and projection of engagement results.<sup>49</sup>

Fallesen and Michel (1991) also observed how students became enamored with the synchronization matrix as essential to the process, yet failed to consider the primary reason why the matrix was used--to record the results of war gaming and serve as a basis for comparison of against other courses of action. The mental focus was for each planning group to simply complete the matrix and not how the matrices, if designed with similar parameters, could help the commander see the differences between the two options:

At Corps, two teams were used each to complete a synchronization matrix on one concept with the purpose, in part, to further consider which was the better COA. The two teams did not coordinate in advance how each one would do the matrix, so while one team was doing synchronization at (projections of battle events for) 4 hour intervals, the other was doing it at 12 hour intervals. One started at H hour, the other started about H-24 hours. Where the two efforts ended up for comparison was not observed, but the mismatches of different bases of comparison is evident.<sup>50</sup>

Thordsen, Klein et al. (1991) also observed the inherent problems with using the synchronization matrix as a solution for considering branches and sequels of a particular course of action and comparing it to other courses of action:

As good as the matrices are, we do urge caution in that they have the potential to lull one into a false sense of security due to the great amount of detail they require to be successfully completed. This amount of detail can misguide one into believing you have covered everything, when in fact, there will always be some things that are missing. Another point of caution is that

this same amount of detail can potentially result in an information overload condition where there is so much detail that critical material gets buried in the volume.<sup>51</sup>

Lussier and Litavec's (1992) collection of commander's comments, in support of earlier discussion of concurrent evaluation of several options, advocates that the "optimal" decision is not as important as a "workable" decision that is arrived at earlier, better wargamed, synchronized, and executed. The inference here is that less time spent on picking the best solution can be better spent on quality wargaming of the actual decision and a better appreciation of all the possible branches and sequels:

They emphasized that the important thing is how well planned and executed the mission is, not which course of action is chosen. A suboptimal plan . . . that is well executed is much better than a perfect plan that arrives too late. Increased decision-making time directly reduces planning time, rehearsal time and subordinate planning and preparation time. These latter activities have much higher payoff than the possibility of arriving at an incrementally better course of action.<sup>52</sup>

Fallesen, Carter et al. (1992) not only observed that wargaming and synchronization were the more important steps of the process, but also the most difficult and required the most experience to complete. This condition was further exacerbated by a general lack of accepted techniques for using automation and simulation to observe the application of combat power in relation to time, space, and expected outcomes:

Wargaming and comparison were the most difficult steps in the experimental task. Participants generally lacked the knowledge and experience to make battle projections. They reported that neither doctrine or instruction provides adequate guidance for making war gaming projections.<sup>53</sup>

Summary. Current procedures as outlined in ST 101-5, clearly define the purpose of war gaming and the development of the synchronization matrix as the last step prior to comparing the separate courses of action. The most recent research and observations from the field indicate that the primary purpose of war gaming should be the refinement of the intended course of action and not as a process for selecting between recommended options. War gaming is in essence an appreciation of intended outcomes as they relate to time and space-- action, reaction, and counteraction. There is some evidence to suggest that this understanding of how a course of action may unfold is a product of experience. Current procedures imply but do not dictate that the commander participate in the war gaming session for every recommended course of action. This is certainly time consuming and he may simply review the results of the synchronization matrices developed by the staff. The synchronization matrix is only a planning tool to record results. When the commander does not participate in the war gaming process, his experience precludes the best possible visualization of the expected outcomes.

Some researchers and commanders feel the best focus for war gaming, with the commander's involvement, is the intended course of action. If a decision can be made quickly, greater benefit is gained by then concentrating on all possible branches and sequels of the selected course of action. The evidence seems to suggest that staffs simply do not war game adequately. Developing a synch matrix for each recommended course of action is a time consuming process. Current observations indicate that staffs may become too enamored with completing the

synchronization matrix, and fail to appreciate the importance of the war gaming process for visualizing the intended outcome. Losing sight of the intended purpose of war gaming is further compounded by the lack of involvement by the commander.

## Endnotes

<sup>1</sup>Jon J. Fallesen, Overview of Army Tactical Planing Performance Research (Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1990), 1-19.

<sup>2</sup>U.S. Army, FM 101-5 (draft), Command and Control for Commanders and Staff (Washington, DC: Department of the Army, 1995).

<sup>3</sup>Fallesen, 4.

<sup>4</sup>Ibid., 6.

<sup>5</sup>Ibid., 8.

<sup>6</sup>Ibid., 6.

<sup>7</sup>Ibid.

<sup>8</sup>Ibid.

<sup>9</sup>Ibid., 7.

<sup>10</sup>Ibid., 8.

<sup>11</sup>U.S. Army, ST 100-9, The Command Estimate Process (Fort Leavenworth, KS: Army Command and General Staff College, 1986).

<sup>12</sup>Fallesen, B-1 - B-3.

<sup>13</sup>Ibid., C-2.

<sup>14</sup>Ibid., D-2.

<sup>15</sup>Rex R. Michel and Sharon L. Riedel, Effects of Expertise and Cognitive Style on Information Use in Tactical Decision Making (Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1988), 26.

<sup>16</sup>Jon J. Fallesen, Charles F. Carter, et al., The Effects of Procedural Structure and Computer Support Upon Selecting a Tactical Course of Action (Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1992), viii.

<sup>17</sup>Ibid., 1-2.

<sup>18</sup>James W. Lussier, Robert E. Solick, and S. Delane Keene, Experimental Assessment of Problem Solving at the Combined Arms and Services Staff School (Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1992), 15-16.

<sup>19</sup>Stanley M. Halpin and S. Delane Keene, Desert Storm Challenges: An Overview of Desert Storm Survey Responses (Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1993), 18.

<sup>20</sup>Ibid., 16.

<sup>21</sup>Ibid.

<sup>22</sup>Jon Grossman, Battalion-Level Command and Control at the National Training Center (Santa Monica, CA: RAND, Arroyo Center, 1994), 21.

<sup>23</sup>Marvin Thordsen, Joseph Galushka, et al., A Knowledge Elicitation Study of Military Planning (Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1990), 39.

<sup>24</sup>Ibid., 49.

<sup>25</sup>Ibid., 47.

<sup>26</sup>Halpin and Keene, 15.

<sup>27</sup>Ibid.

<sup>28</sup>Christopher P. Brezovic, Gary A. Klein, and Martin Thordsen, Decision Making in Armored Platoon Command (Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1990), 4.

<sup>29</sup>Fallesen, Carter, et al., 85-90.

<sup>30</sup>James W. Lussier and Douglas J. Litavec, Battalion Commanders' Survey: Tactical Commanders Development Course Feedback (Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1992), 18-20.

<sup>31</sup>Fallesen, 14.

<sup>32</sup>Marvin L. Thordsen, Gary A. Klein, et al., Methods for Providing Direct Feedback About Decision Processes for Command and Control Classroom Exercises (Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1991), 18.

<sup>33</sup>Jon Fallesen, James W. Lussier, and Rex R. Michel, Tactical Command and Control Process (Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1992), 8.

<sup>34</sup>Lussier and Litavec, 16.

<sup>35</sup>Ibid.

<sup>36</sup>Halpin and Keene, 17.

<sup>37</sup>Ibid.

<sup>38</sup>Ibid., 18.

<sup>39</sup>Ibid.

<sup>40</sup>Gary A. Klein and Roberta Calderwood, Investigations of Naturalistic Decision Making and the Recognition-Primed Decision Model (Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1990), 13.

<sup>41</sup>Ibid., 20.

<sup>42</sup>N. Geva, Executive Decision Making Process During Combat: A Pretest of the Content Analysis Schema (Zikhron Ya'akovi, Israel: Israeli Institute for Military Studies, 1988), 32.

<sup>43</sup>Brezovic et al., 1-2.

<sup>44</sup>Ibid., 5.

<sup>45</sup>Thordsen, Galushka, et al., 41.

<sup>46</sup>Ibid., 42.

<sup>47</sup>Lussier, Solick and Keene, 10.

<sup>48</sup>Fallesen, Lussier, et al., 8.

<sup>49</sup>Jon Fallesen and Rex R. Michel, Observations on Command and Staff Performance During CGSC Warrior '91, 1991, 5-9.

<sup>50</sup>Ibid., 6.

<sup>51</sup>Thordsen, Klein, et al., 17.

<sup>52</sup>Lussier and Litavec, 17.

<sup>53</sup>Fallesen, Carter, et al., 89.

### CHAPTER THREE

#### A PROPOSED COMBAT DECISION-MAKING PROCESS

The review of literature demonstrates that commanders and staffs experience difficulty when using the deliberate decision-making process in time-constrained environments. Evidence indicates that the current deliberate process may be too inflexible to compensate when planning time is limited. Observations and interviews from commanders in the field also indicate a majority viewpoint that doctrine does not adequately address how to effectively abbreviate the process.

Draft FM 101-5 describes only one decision-making process--the deliberate decision-making process. Draft FM 101-5 further stipulates, "It is extremely important that the deliberate process be used initially, returned to whenever operations tempo allows, and practiced during all training events."<sup>1</sup> It is widely accepted by military professionals that individuals and units fight as they are trained. If, as draft FM 101-5 indicates, commanders and staffs should train solely on the deliberate decision-making process, then our doctrine may be inadequately preparing commanders and staffs for the actual conditions of combat.

Given the documented observations, it is entirely appropriate to explore the question of "when" and "how" to abbreviate the deliberate decision-making process, or provide a more suitable decision-making model that better prepares commanders for combat. The purpose of this

chapter is to present an alternative to the DDMP that the researcher believes more adequately addresses decision-making in time-constrained environments. If subsequent analysis or further research validate the proposed combat decision-making model, the researcher believes this model should become the Army's focus for training. If individuals and units do indeed "fight as they are trained", then the proposed model may serve as a better framework for making decisions in combat.

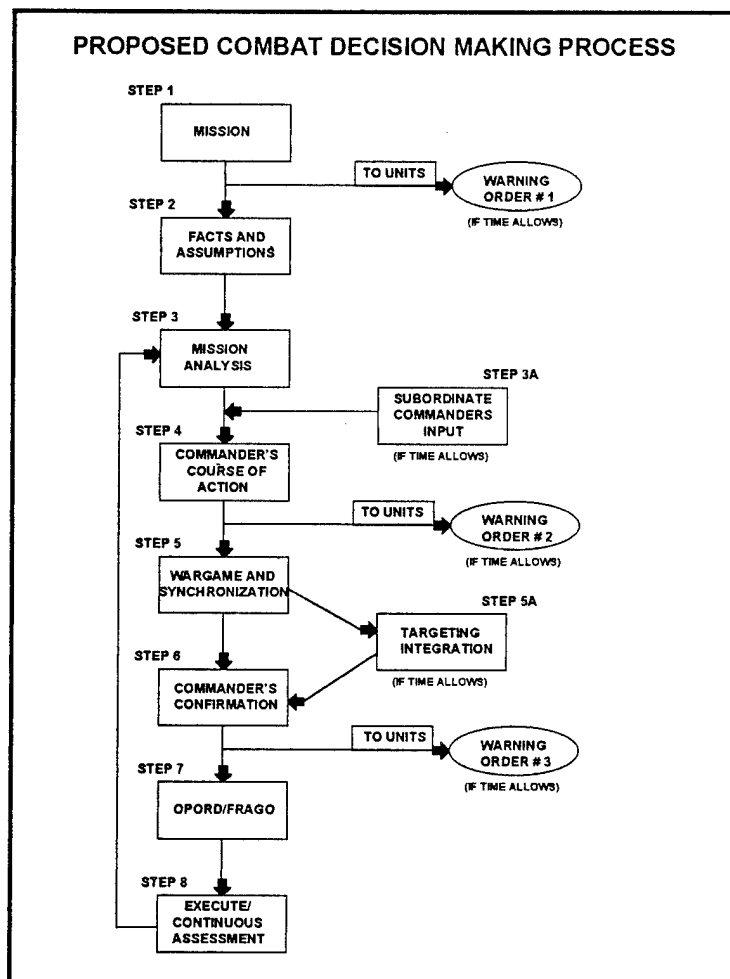


Fig. 2. Annotated Steps of the Proposed Combat Decision-Making Model.

As currently written, the deliberate decision-making process consists of nine annotated steps, as outlined in figure 1.<sup>2</sup> The proposed combat decision-making process shown in figure 2 consists of eight annotated steps. Each is explained and discussed further as they differ from the current DDMP prescribed in draft FM 101-5. Both the proposed combat model and the DDMP are then compared in chapter four using the criteria discussed in draft FM 101-5 that defines an effective decision-making process.

#### Mission Analysis (STEP 1, STEP 2, STEP 3)

With minor exceptions, the first three formal steps in both the deliberate and the proposed combat decision-making process remain the same. As is the case in any analytical process the first steps always consist of gathering all known or relevant information, making assumptions, and recognizing or defining the problem. This sequence of logic remains consistent in both the deliberate and the proposed combat models. Despite any assistance from the staff, the commander bears the ultimate responsibility for defining and communicating the end state. Whether in a peacetime planning environment relatively unconstrained by time, or under the stressful conditions of combat, the commander must clearly "see" what must be accomplished. No single process or decision model, despite its effectiveness, can rescue a commander from his failure to correctly identify the problem or clearly define the mission with his intent and envisioned end state.

The proposed draft FM 101-5 states that within the framework of the deliberate decision-making process the commander and each staff

member prepares an estimate.<sup>3</sup> The synthesis of information provided by these estimates initially comes together in mission analysis. Although draft FM 101-5 further states that the commander "drives the process", the doctrine purports that the commander and staff are executing two separate processes designed to mutually support the other.<sup>4</sup> This separation in the process is illustrated below in figure 3.<sup>5</sup>

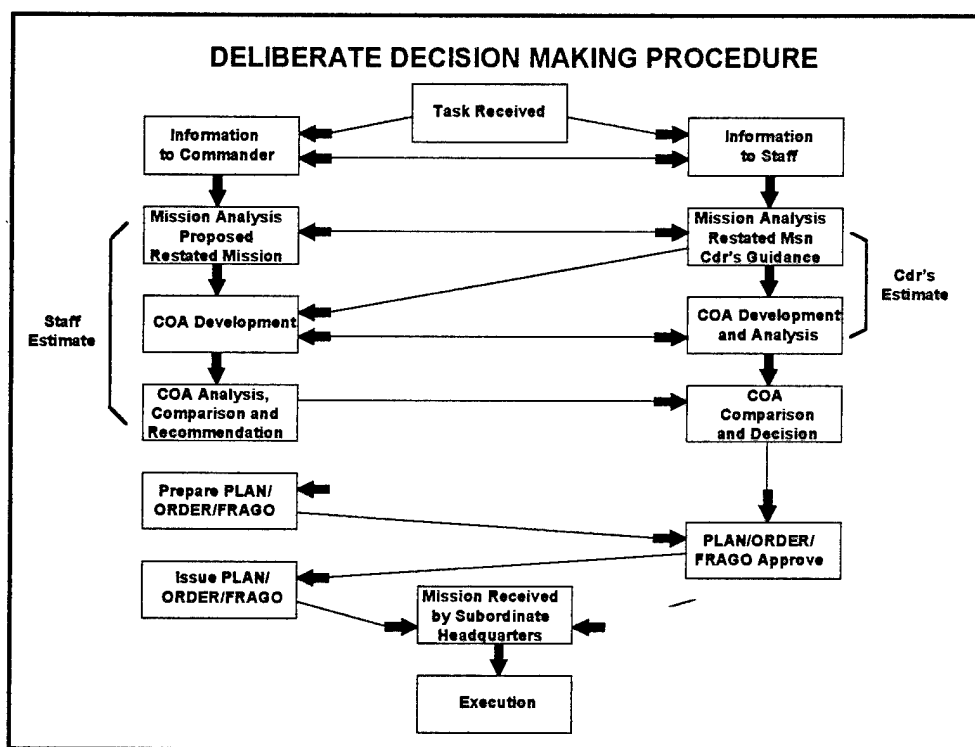


Fig. 3. The Deliberate Decision-Making Procedure extracted from ST 101-5, Command and Staff Decision Processes, pg I-2-6.

The proposed combat model differs with this separation of the commander and staff during mission analysis. In the combat model, the commander and staff perform mission analysis together--not separately. Essentially, there is no parallel process or separation between the

commander and his staff throughout the entire combat model. Not only does the commander "drive the process", he actively leads the staff through each step. This is a distinctly different approach from the current DDMP.

Additionally, the proposed combat model places greater emphasis that mission analysis is both continuous and cyclic. In DDMP, mission analysis is essentially performed only once during the process. The proposed combat model purports that mission analysis should be constantly reassessed during combat operations. New or changing information may change the intended course of action, but DDMP provides little discussion that the commander's end state may change as well.

Though draft FM 101-5 states that the commander's and staffs' estimates are continuous throughout, it does not clearly define when and how these continuously changing estimates should affect or change the on-going deliberate process. The ninth and final step of the annotated steps within the deliberate decision-making process concludes the process. The draft FM 101-5 discounts that the process should be cyclical.<sup>6</sup> Mission analysis in the proposed combat process, however, is both continuous and cyclic. The eighth and final step of the proposed combat model "restarts" the process once execution begins, forcing the commander and staff to continuously reevaluate the environment and expected end state as the situation develops. This thought process of continuous reassessment of the mission and the environment continues until combat operations are concluded. Exactly how the last step should "restart" mission analysis is explained further later in this chapter.

### Subordinate Commanders' Input (STEP 3A)

This step in the proposed combat decision model is a subset of completing mission analysis (see Fig. 4). It is designed as a formal sub-step within the process to highlight its importance and significance.

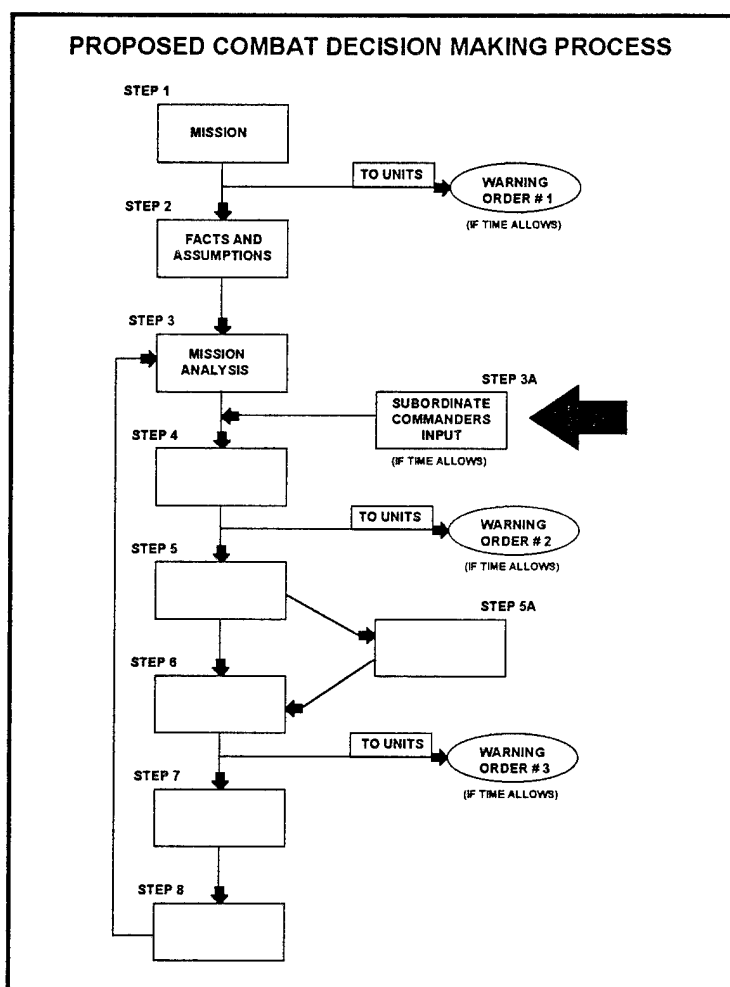


Fig. 4. Subordinate Commanders' Input Integrated Within the Proposed Combat Decision-Making Model.

There is no formal consideration of subordinate commanders' input in the deliberate process discussed in the draft FM 101-5.

Exactly why this is not considered in the current deliberate process is unknown, though perhaps many instances could be cited in peacetime OPLAN development where this step would be impractical or inappropriate. In combat, however, the commander's ability to obtain his subordinate commanders' input prior to making a decision may provide tremendous advantages. This input does not necessarily have to occur face-to-face. It can be communicated in a variety of ways; to include via radio.

At the brigade level and above, the subordinate commanders are generally more experienced than the staff (i.e., battalion commanders are command slated Lieutenant Colonels as compared to the brigade XO and S3 who are normally senior Majors or junior Lieutenant Colonels). Brigade Commanders are normally more senior and experienced than the division staff, Division Commanders more so than the Corps Staff and so on at each progressively higher echelon. Staffs can become isolated from the sights and sounds of the battlefield as they generally remain fixed at command post locations. The subordinate commanders on the other hand, normally have a very good appreciation of the battlefield environment; or in the case of planning done outside the area of operations, they possess a wealth of experience on the time and spacial relationships of all their battlefield operating systems. The subordinate commanders generally offer a more accurate picture than the staff on the status of their unit, its capabilities, and the seemingly endless intangibles that can affect the perceived outcome. If a decision is required while combat is in progress, the subordinate commanders are closer to the fight and should be able to more accurately portray the enemy situation and their own "feel for the battle." This

input can prove invaluable to the higher commander attempting to reassess the situation and develop a course of action.

As such, this sub-step is considered very much an important part of the proposed combat decision-making model. There will be some situations where neither time nor circumstances permit the commander to confer with his subordinate commanders; however, this exclusion should be carefully considered based on the situation and not arbitrary for the sake of convenience.

#### Commander's Course of Action (STEP 4)

This step in the proposed combat model essentially combines two distinct steps in the deliberate process: (1) commander's guidance and (2) develop courses of action.<sup>7</sup> In the proposed combat decision-making process STEP 4 is the commander's course of action (see Fig. 5). A single course of action developed by the commander or his staff against the enemy's most likely course of action. After mission analysis in the deliberate decision-making model as presented in the draft FM 101-5, the commander issues his planning guidance. This guidance communicates the commander's vision of the operation to his staff and enables them to generate or exclude options that he deems appropriate. Once the commander's guidance is given, the staff operates within the commander's parameters to develop a minimum of two or three courses of action for each anticipated enemy course of action; to include the most likely and most dangerous. For example, if the only anticipated enemy courses of action are a most likely and most dangerous scenario, then the staff

could possibly generate up to four or six courses of actions for further analysis.<sup>8</sup>

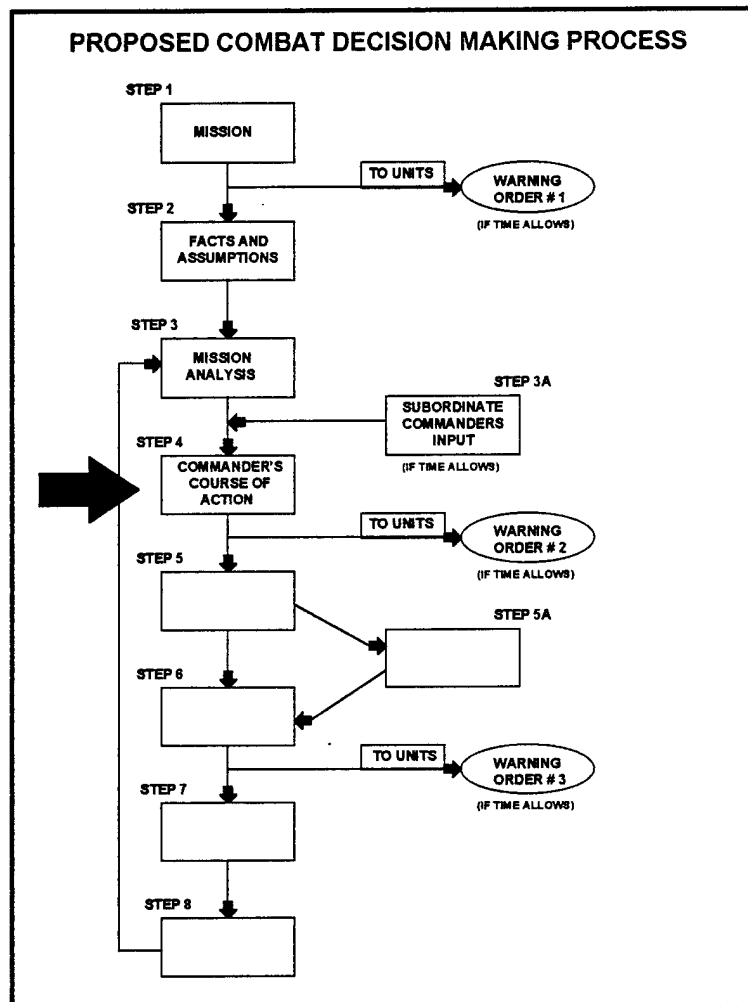


Fig. 5. Commander's Course of Action Integrated Within the Proposed Combat Decision-Making Model.

In the proposed combat model there is only one course of action developed against what the commander believes to be the enemy's most likely course of action. There is no generation of options that enables the commander later in the process, and after much analysis and

comparison, to select what he considers to be the "optimal" decision. This step is indeed the most controversial and perhaps the "defining event" of the author's proposed combat decision-making model. Supported by the theoretical approach of Recognition-Primed Decision Making (RPD) presented in chapter two, this step reflects that a commander can make a decision much sooner by "satisficing" rather than "optimizing."

In the DDMP, the staff who is generally less experienced than the commander will generate options, wargame them, compare them, and then present them to the commander. The commander's participation during any of these steps is not strictly defined. RPD, on the other hand, advocates that the commander will make his decision based on all his experience and recognition of certain environmental queues. The course of action he selects or modifies is the same he would have developed without the staff's efforts in the first place. What remains in the time saved after this initial decision is refinement of the plan, integration of the staff, and war gaming of potential branches and sequels.

#### Wargame and Synchronization (STEP 5)

This step in the proposed combat decision-making process conceptually requires less time than STEP 6, Analyze Courses of Action, in the deliberate process (see Fig. 6). In the deliberate process outlined in the draft FM 101-5, wargaming is initially conducted with the intended purpose of analyzing and comparing options for the commander.<sup>9</sup> Again, if a commander and staff are considering two or

three courses of action for each of the enemy's most likely and most dangerous courses of action, it is possible that they might formally wargame up to four or six times. This potential number of wargaming sessions prior to the commander making his decision on a course of action is certainly involved and time consuming.

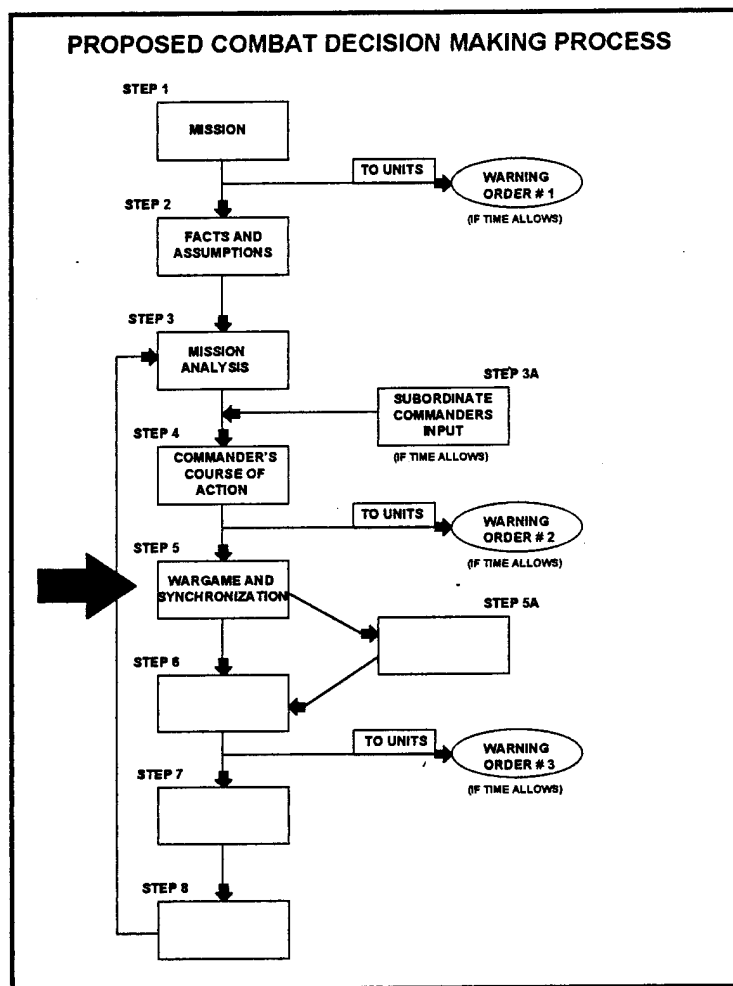


Fig. 6. War Gaming and Synchronization Integrated Within the Proposed Combat Decision-Making Model.

In the proposed combat model the purpose of wargaming is to refine and integrate the commander's intended course of action. Wargaming is not a process of comparative analysis, but a process of refinement. The commander is not looking to optimize his decision, he has essentially made his decision and this step is intended to aid his visualization of the outcome, synchronize all the battlefield operating systems, and identify potential branches and sequels. As time allows, these potential branches and sequels, to include the enemy's most dangerous course of action, can be further war gamed and developed by the staff later in the process.

The primary effort of the staff during this step, however, remains to develop and integrate the commander's initial course of action and recommend modifications as necessary. This step in the process should remain flexible. If a commander feels that a particular branch or sequel is too critical to be left out, then it is addressed at this time. The most important characteristic of this step is the intended purpose of war gaming--to integrate the commander's chosen course of action. Conceptually, all the time saved from not generating and war gaming options earlier may be devoted to a more thorough refinement of the commander's plan, more detailed consideration of potential branches and sequels later in the process, or more effort focused on the actual rehearsal(s) and preparation of the plan.

#### Targeting Process (STEP 5A)

FM 6-20-10, Tactics, Techniques, and Procedures for the Targeting Process, defines the targeting process as follows:

Targeting is the process the combined arms commander uses to focus all the [battlefield operating systems] to achieve his intent. The methodology used to translate the commander's intent into a plan is the decide, detect, deliver and assess methodology. The functions associated with this methodology help the commander to decide what to attack with his fire support system, how to acquire those targets, and when those targets are found, how to attack them in a way that disrupts, delays, or limits the enemy's ability to achieve his objectives.<sup>10</sup>

Targeting is a process that is interwoven and integrated throughout the DDMP. In draft FM 101-5, however, targeting is not discussed or illustrated as an integral part of the decision process. No single step defines when the staff should come together as a team with the commander to integrate the targeting process.

In the proposed combat model, targeting is considered an extension of the wargaming process (see Fig. 7). The necessity to initially exclude targeting from the process should always be a conscious decision carefully arrived at because of insufficient time. If a lack of time precludes the initial targeting process during planning, then it should be initiated by the staff during the execution phase, especially if the execution will take an extended period of time. Targeting is essentially a method of synchronizing combat power--both lethal and non-lethal. A continuous targeting process allows a commander to continue to re-synchronize his plan during execution. Its importance as a tool for commanders and staff to continuously reassess their course of action during execution should not be ignored.

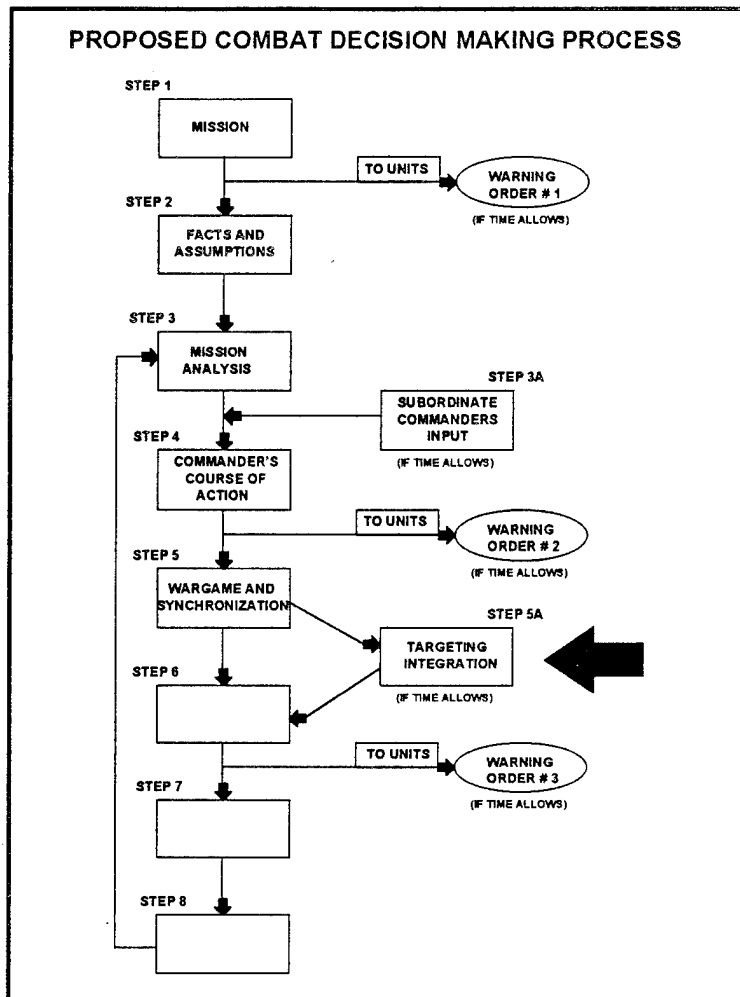


Fig. 7. Targeting Integration Step Integrated Within the Proposed Combat Decision-Making Model.

Targeting is an operational focus versus a fire support methodology. The proposed combat decision-making model provides a method for the commander and staff to refocus combat power within changing environments or evolving end states. The proposed combat decision model attempts to reinforce the importance of targeting by including it as a logical and natural extension of war gaming and synchronization.<sup>11</sup>

#### Commander's Confirmation (STEP 6)

In the draft FM 101-5, STEP 7 in the process consists of the commander deliberating and making a decision from the several courses of action developed by the staff.<sup>12</sup> The staff normally outlines the advantages and disadvantages of each option, and then may use a variety of methods or criteria to provide a recommendation. This recommendation is provided in the form of a decision brief. In the proposed combat decision-making process this step is called the commander's confirmation (see Fig. 8).

In the proposed combat model this step is anticipated to be much more flexible based on time and circumstances. If the commander deems that time is critical, he may decide to develop his course of action, mentally wargame the outcome, and confirm his decision to the staff all in a relatively short period of time. In this case, the combat decision-making process is more cognitive rather than a formal integrated staff process. If more time is available, the commander may elect to have his staff further develop, refine and war game his course of action before he confirms the original plan or a modified version. Obviously, the later condition would be preferred.

The essential element of the confirmation step is its flexibility and that the commander confirms his course of action when he deems it appropriate; normally for the sake of giving his subordinate units the necessary time to plan and prepare. The commander's confirmation may be very informal or it may come at the conclusion of a formal briefing much similar to the decision brief in the deliberate process.

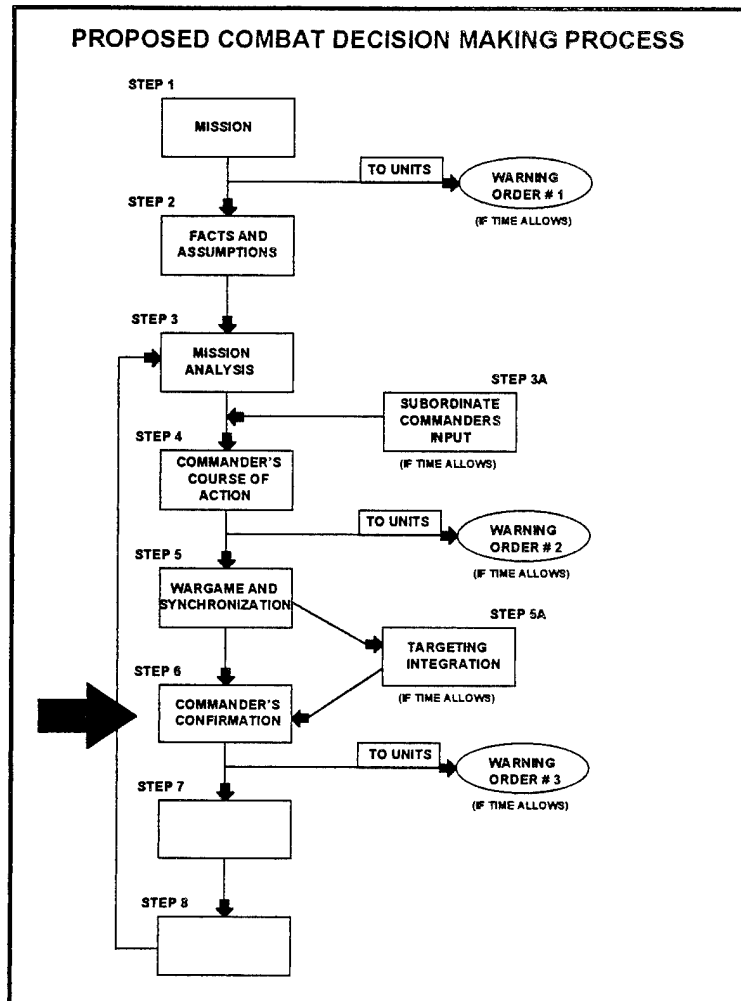


Fig. 8. Commander's Confirmation Integrated Within the Proposed Combat Decision-Making Model.

In either case, the commander has the flexibility to choose based on the amount of time available. Once the commander confirms his initial course of action, either with or without any modifications, he then directs the staff to communicate the plan to the subordinate elements in the form of an OPORD or FRAGO.<sup>13</sup> There is no difference in this step of the proposed combat model and the deliberate process describe in the draft FM 101-5.

#### Execute/Continuous Assessment (STEP 8)

In draft FM 101-5 the entire estimate process nested within the annotated steps of the deliberate process is described as continuous--continuous but not cyclic.<sup>14</sup> As new or changing information is received the commander and staff are expected to incorporate this additional input into the process as necessary. The detailed discussion, however, of when or how this is done during a fluid planning environment is not provided in the doctrinal draft.

The proposed combat model recognizes fluid planning will be the norm in combat. The proposed combat model also recognizes that new or changing information that arrives once execution begins may drastically change the original mission analysis. Doctrine places much of the emphasis on the value of a continuous estimate during planning, but underscores the necessity within DDMP for continuous assessments during execution. As seen in figure 1, of the annotated steps of DDMP, the process appears to stop at STEP 9, execution and supervision.

Advocates of the deliberate decision-making process, as the one and only acceptable process, may counter that this assessment of continuous in the deliberate model is a very rigid interpretation. Perhaps so, but the proposed combat model attempts to provide discussion on "when" and "how" the decision model should incorporate a constant flow of new or changing information during the process, especially once execution begins.

The solution provided in the combat model is that decision-making within the proposed framework is both continuous and cyclic (see Fig. 9). If, for example, during execution the situation or envisioned

end state changes so drastically as to nullify the initial parameters set in mission analysis, then the combat model advocates that the commander simply restarts the process. Because the original combat model emphasized that it's "OK" to focus on a single course of action, this is less a difficult leap in flexibility or logic.

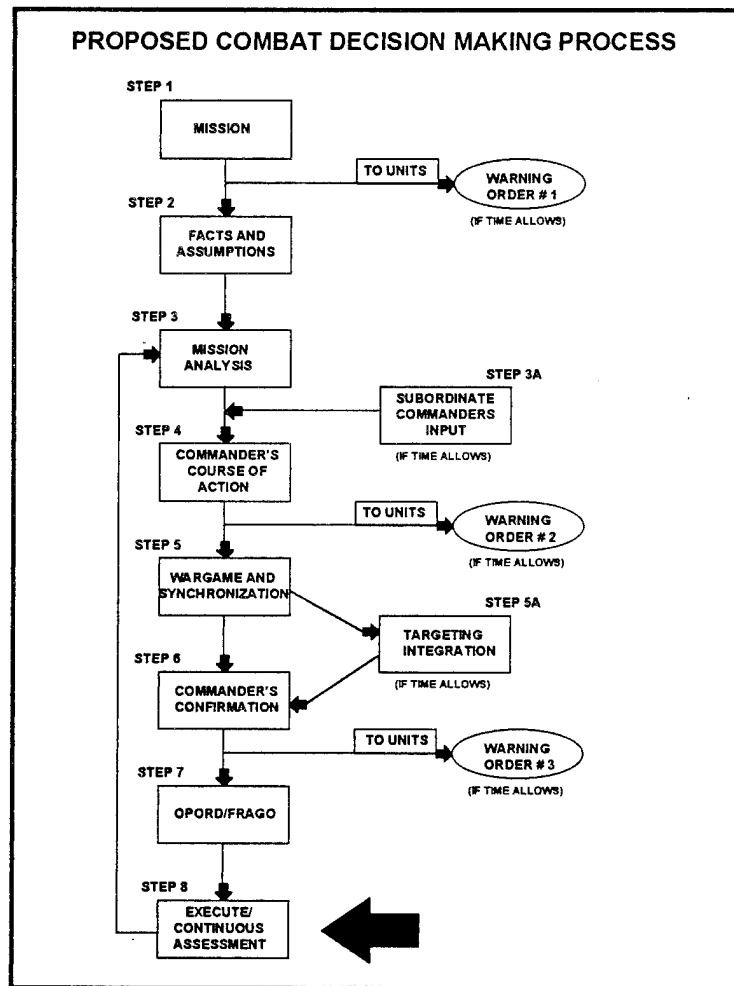


Fig. 9. Execution and Continuous Assessment Integrated Within the Proposed Combat Decision-Making Model.

The importance of creating a doctrinal mind-set of continuous assessment during execution and the flexibility to restart the process, especially when the end state changes, should not be underemphasized. The commander and staff attempt to use as much of the previously synthesized information and products as possible, but also recognize that a changing environment or end state should not make them slaves to their original mission analysis or course of action.

A technique currently used at the CTCs to assist the commander with his continuous reassessment during execution is the use of "Staff Battle Drills." Staff battle drills are a guide to speed reaction by the staff and prevent fratricides. They should not be considered a lock-step methodology that robs the staff of its intuition and initiative. Primarily, staff battle drills should remain enemy focused and serve as a natural extension of executing the targeting process. A continuous staff battle drill methodology easily dovetails with a continuous targeting process. Essentially, staff battle drills should serve as a rapid method for clearing fires, executing the targeting board, recommending suitable alternatives when enemy actions are not anticipated by the targeting process, and immediate follow-up to the situational template along with advice to the commander if the enemy situation significantly changes. If significant changes develop, the commander and staff relook mission analysis and the selected COA. This technique serves to keep the combat process cyclic. An example of staff battle drills at the brigade level are provided at Appendix A.

## Summary

The proposed combat decision-making model is essentially built around the theoretical discussion of "satisficing." If experience is the real measure of better decision-making, then the commander's single course of action framework may provide tremendous advantages. The proposed combat model also advocates three major changes that are distinctly different from the deliberate decision-making model.

First, the merits of considering the subordinate commanders' input during or at the conclusion of mission analysis is greatly emphasized. The proposed combat model formalizes this step to provide a tremendous sounding board of experience, a better estimate of friendly capabilities, and a more accurate picture of the enemy situation if the unit is currently in combat.

Second, the proposed combat model clearly defines when and where in the process the commander and staff should initially integrate the targeting process. Although targeting occurs throughout and parallel with the DDMP, the proposed combat model connects the process directly into the decision-making process after course of action development. This formal step of integration into the decision-making process emphasizes the importance of making targeting an operational focus and not simply a fire support focus.

Third, the proposed combat model places tremendous emphasis on both a continuous and cyclic process. The commander should continue to reassess his original mission analysis and analyze whether the environment or end state have changed. In fluid environments, the commander cannot expect that his original mission analysis will always

hold true. A failure to revisit mission analysis in a cyclic fashion, as new or changing information develops, may lead commanders to continue pursuing an ineffective course of action.

### Endnotes

<sup>1</sup>U.S. Army, FM 101-5 (draft), Command and Control for Commanders and Staff (Washington, DC: Department of the Army, 1995), 4-67.

<sup>2</sup>U.S. Army, ST 101-5, Command and Staff Decision Processes (Fort Leavenworth, KS: Command and General Staff College, 1994), I-2-7.

<sup>3</sup>FM 101-5 (draft), 4-5.

<sup>4</sup>Ibid., 4-6.

<sup>5</sup>ST 101-5, I-2-6.

<sup>6</sup>FM 101-5 (draft), 4-6.

<sup>7</sup>Ibid., I-2-7.

<sup>8</sup>FM 101-5, 4-31.

<sup>9</sup>FM 101-5 (draft), 4-35.

<sup>10</sup>U.S. Army, FM 6-20-10 (draft), Tactics, Techniques and Procedures for the Targeting Process (Washington, DC: Department of the Army, 1995).

<sup>11</sup>Ibid.

<sup>12</sup>FM 101-5 (draft), 4-59.

<sup>13</sup>ST 101-5, I-2-7.

<sup>14</sup>FM 101-5 (draft), 4-6.

## CHAPTER FOUR

### ANALYSIS

The proposed combat decision-making process presented in the preceding chapter is an attempt to provide a workable alternative to the current deliberate model. The insights and observations provided by the current field of research indicate the deliberate process may not be sufficient for time-constrained environments. As noted in chapter two, commanders and staffs may need more than a brief overview of suggested techniques to abbreviate the process.

The purpose of this chapter is to determine what benefits, if any, are gained by using the proposed combat decision-making model. If benefits are realized, then under what conditions do they apply? Draft FM 101-5 describes four distinct categories that encompass an effective process. The process must, "be flexible, be comprehensive, be continuous, and focused on the future."<sup>1</sup> Thus, any proposed alternative should satisfactorily address each of these categories. Using these same four categories outlined by the proposed doctrine, a comparison of the two processes should be possible. If the proposed combat model offers significant advantages over the deliberate model, then perhaps doctrine should consider the validity of using a second process.

#### A Comprehensive Process

A comprehensive process should be able to clearly assimilate both the environment and the full spectrum of information that has an

impact. If done effectively, commanders and staffs can achieve full or near-full understanding of how a given decision will produce a desired result. Draft FM 101-5 defines a comprehensive process:

The estimate process must consider both the quantifiable and intangible aspects of military operations. It requires the translation of friendly and enemy strengths, weapon systems, training, morale, and leadership into combat capabilities. The estimate process requires a clear understanding of weather and terrain effects and most importantly the ability to visualize the battle and/or crisis situations requiring military forces.<sup>2</sup>

Again, as draft FM 101-5 states, this ability to "visualize the battle" with all its quantifiable and intangible aspects is an extremely important measure of a comprehensive process.

The deliberate process in draft FM 101-5, further describes that a commander will achieve "optimal" results through the careful consideration of options. Operating within the parameters of the commander's planning guidance, the staff is expected to develop options that address each probable enemy course of action. FM 101-5 states:

The commander's guidance provides the number of COAs to develop; which enemy COAs to address; and the priority for addressing them. . . . The staff must avoid the common pitfall of presenting one good COA among several "throwaway" COAs. . . . Although the ultimate goal is to develop COAs for every possible enemy COA that the G2 (S2) developed before or during mission analysis, the number of COAs the staff develops should be manageable.<sup>3</sup>

After COAs are developed the staff begins the process of analyzing each in more depth, with the goal to ultimately recommend the best one. The cornerstone of this analysis is the war gaming process. It is through war gaming that the commander and staff are able to visualize the outcome of a particular friendly COA along with its unique branches and sequels. Draft FM 101-5 states:

A war game is a disciplined process for visualizing how a battle might unfold. It is the most valuable step with the COA analysis. By war gaming, the staff takes a COA and begins to develop a detailed plan. Because of the importance of this process, more time is allocated to this step than any other. . . . When time is critical, key staff officers must conduct the war game as a mental exercise while viewing a map. However, these abbreviated techniques can only be of benefit if the officers are experienced; adhere to the rules; follow the steps in a disciplined manner; use good judgment in assessing results; and involve as much of the staff as possible.<sup>4</sup>

Thus, if doctrine suggests that a comprehensive process is one that best permits a commander to "visualize" the outcome, then war gaming becomes a significant measure of its effectiveness.

Again, this conceptual framework of generating options and respectively war gaming each one allows the commander to "optimize" his decision. In other words, given several options and an opportunity to visualize how each might turn out, he is able to select the "best" course of action.

For example, if the S2/G2 indicates that there are two enemy courses of action, then the S3/G3 should develop two or more friendly courses of action to address each enemy COA. In this case, the enemy may present "a most likely" COA and a "most dangerous" COA. It is certainly possible that several other enemy COAs could exist. For the sake of argument, however, this time we will assume only two. The S3/G3 then develops two or more friendly COAs for each. Draft FM 101-5 does not dictate the number of possible friendly COAs for each except that the number should be "manageable."<sup>5</sup>

Again, for the sake of argument assume that the S3/G3 develops three COAs for each enemy COA. In this particular scenario there would be six friendly courses of action for the commander and staff to analyze

and consider. Each friendly course of action would then be war gamed in turn, and a variety of branches and sequels for each COA might also be identified. The diagram below illustrates how this might look.

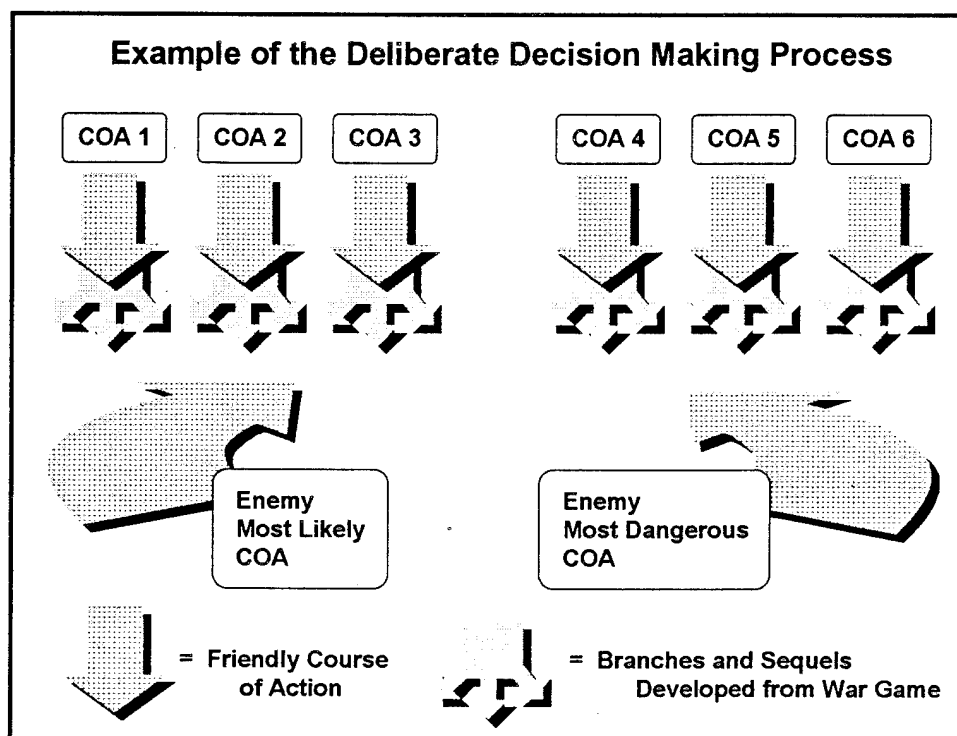


Fig. 10. Example of the Deliberate Decision-Making Process.

After war gaming each friendly COA and considering the analyses of the staff, the commander then selects what he feels to be the best or "optimal" COA. The remaining five COAs are then discarded, or preserved as potential solutions to branches and sequels identified from the selected COA. In decision theory, Klein and Calderwood describe this method as an "optimization strategy."<sup>6</sup> In other words, all available options are considered before a decision is made.

The Cognitive Domain. Draft FM 101-5 indicates that this process is more than a methodology for commander and staff integration, it is a "mental" sequence. FM 101-5 implies that the deliberate decision-making process should first serve as a cognitive framework for decision-making. If, for example, a commander had less than ten minutes to make a decision, draft FM 101-5 purports that the deliberate process should still serve as the commander's mental road map for arriving at the best possible solution.

Although both the commander and staff prepare the estimate of the situation, it exists first and foremost in the commander's mind. He prepares the commander's estimate (either mentally or in writing) while continuing to collect and analyze METT-T as well as all other relevant factors that could affect the mission.

The operation (commander's) estimate analyzes all of the factors affecting the mission while determining all reasonable COAs and their effect on friendly forces. . . . The commander uses his estimate as a cross-check of his staff's estimates. The commander's estimate culminates in a decision; the operations estimate concludes in a recommendation.<sup>7</sup>

The proposed combat decision model presented in chapter two also supports the doctrine's assertion that the heart and soul of the process must be a cognitive framework. The proposed combat model, however, disagrees with the doctrinal framework of how this cognitive model should look. The proposed model challenges the current theory that commanders in stressful, time-constrained environments will cognitively generate and evaluate options concurrently and then select the best solution. Research indicates that "experienced" decision makers will rarely think in this manner.<sup>8</sup>

The proposed combat decision-making process advocates the cognitive approach of "satisficing" rather than "optimizing."<sup>9</sup> Experienced commanders who understand both the nature and friction of

combat are more likely to rely on their first COA developed as the best possible solution. They draw upon all their experience, a combination of quantifiable and intuitive informational queues, and develop a course of action to meet the circumstances. If this course of action later proves to be unsatisfactory, then the commander will generate another. This is done in a sequential or "serial" fashion until a suitable solution is found to satisfy the situation.

Klein and Calderwood (1990) build on this theory of serial generation and evaluation in their discussion of the recognition-primed decision (RPD) model:

The RPD model extends the concept of satisficing in several ways. It asserts that the first option selected from the "action queue" is the most typical option, and therefore has a high likelihood of being effective. Therefore the proficient decision maker begins with a promising option, making satisficing a more powerful strategy than if options were generated randomly.

A serial evaluation strategy as posited by the RPD model continuously makes available to a decision maker a preferred course of action. If time pressure forces a response, decision makers are prepared. In contrast, a concurrent evaluation model would leave a decision maker unprepared for action during the time course of the analysis. Only when all the analyses were completed would it become clear which course of action to select.<sup>10</sup>

In other words, RPD discounts that any experienced decision maker will cognitively generate options and evaluate them concurrently to find the best possible solution. RPD advocates that an experienced decision maker will assess the environment and available information to rapidly develop a COA that satisfies the circumstances. If new or changing information is received then the decision maker will generate a new COA to satisfy the new set of circumstances.

Proponents of the RPD model assert that the decision arrived at first through serial generation is probably of the same quality as one

arrived at after careful consideration of numerous options. This appears valid because the experience of the decision maker has more impact than the number of available options considered.<sup>11</sup> If, as doctrine suggests, a commander visualizes the fight through war gaming, Klein and Calderwood offer that this war gaming is accomplished cognitively through a process known as progressive deepening:

Progressive deepening is the process of imagining how an option will be carried out within a specific situational context. It is the attempt to anticipate each important step, to notice the most likely reaction(s) to that step, to find the best way(s) to handle that reaction. It is an important component of recognitional decision-making. Progressive deepening enables a decision maker to forecast the adequacy of a course of action. Within behavioral decision theory, options are evaluated by comparing them to each other with regard to how well they satisfy a set of criteria. In contrast, the RPD model asserts that one action is evaluated at a time. This is done by imagining how the action would be implemented within the specific setting. It is like running an "instant pre-play" to see if anything might go wrong.<sup>12</sup>

Klein and Calderwood found that existing research supported this hypothesis of how experienced decision makers cognitively "war game" options before arriving at a decision:

One of the first descriptions of this strategy in the psychological literature was in the work of de Groot (1965/1978). He coined the term "progressive deepening" to describe how chess grandmasters follow out a line of play and make sure it does not lead to any blunders. De Groot studied chess players trying to pick the best move in a difficult position. In the 40 protocols he presents, the chess players considered anywhere from 2 to 11 options but almost never compared one option to another.<sup>13</sup>

Thus, the proposed combat model attempts to address what may be an incorrect hypothesis in DDMP of how experienced commanders cognitively make decisions in stressful, time-constrained environments. A commander's first COA validated through "progressive deepening" is likely to be his best COA under the circumstances. For experienced

decision makers operating within a familiar environment, "satisficing" is perhaps a more accurate picture of the cognitive process than "optimizing." The real measure of quality of a particular decision, perhaps, is the relative capability and experience of the decision maker.

Commander and Staff Integration. In order to examine whether "optimizing" remains effective when the staff is integrated, it is necessary to return to the example presented earlier on COA development:

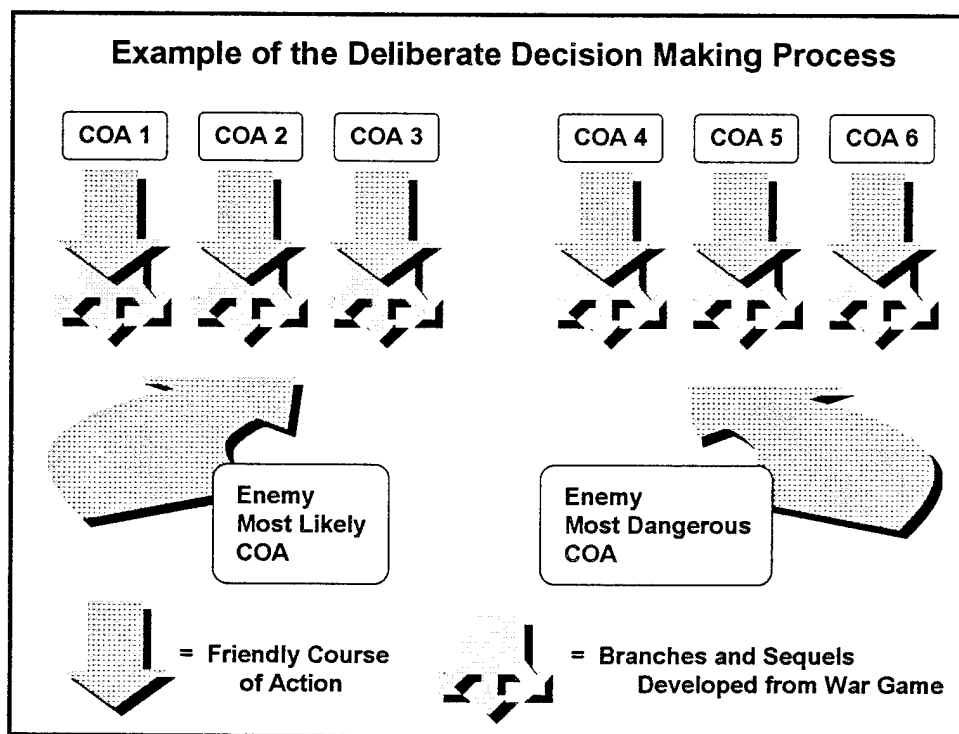


Fig. 11. Example of the Deliberate Decision-Making Process.

In the process of optimizing, the quality of a decision is measured as the best option selected from the available options considered. Yet, how is the decision maker supposed to know if he has

considered all the available options? Draft FM 101-5 does not prescribe the number of COAs to be developed, except to state that the number should be "manageable."<sup>14</sup> It is hard to imagine that within the complex environment of combat all the conceptual possibilities would ever be considered. Certainly within the realm of possibilities some would undoubtedly be missed. Doctrine also states that the commander may limit the number of COAs developed or confine the planning to focus around a finite number of enemy COAs.<sup>15</sup> This would appear to further limit the commander's available options.

Again, for the sake of argument assume that a reasonably experienced staff develops six distinguishably different COAs as depicted in the previous diagram. How is the commander also to know that the COAs developed are adequate? If the number of options are limited due to time, then certainly those developed for further analysis must be sufficient. Doctrine indicates that the staff generates the conceptual possibilities, yet the staff is generally less experienced than the commander:

After receiving guidance, the entire staff (usually led by the CofS/XO) develops COAs for analysis and comparison of techniques to achieve the mission. Initially, while the G3/S3 formulates potential conceptual possibilities, other staff officers (including FS, engineer, AD, chemical, communications, and transportation officers) consider integration of their BOS.<sup>16</sup>

While it is possible that some staff members could be more experienced than the commander, this would probably be an anomaly within the U.S. Army's current system of command selection. The RPD model implies that the most experienced decision maker should develop the COA. Again, because experience is a better measure of quality than the number

of options developed. Even when the staff presents the COAs to the commander for analyses, he is still likely to draw upon his experience to shape the final product. Despite the "less-experienced" staff's efforts to generate options, the commander probably will select a COA that resembles what he would have generated himself.<sup>17</sup>

There are perhaps two unique situations when this may not be true. The first occurs when the commander lacks sufficient experience. This certainly does not impugn his right to command. For a number of valid reasons, he simply may not understand the quantifiable and intangible nature of combat to make effective decisions. If he recognizes this weakness, then the staff's ability to generate options will prove beneficial.

The second condition exists when the nature of the environment is so vastly unique from anything previously known that it nullifies all previous experience. In this situation, certainly options generated from a staff team effort may prove beneficial; a case of "two heads are better than one." Thus, the deliberate model does offer advantages through option generation when the commander lacks experience or the environment is extremely foreign.

Perhaps it is important to recall from chapter two that the current process of generating and war gaming options by the staff evolved from the Army's experience in Vietnam.<sup>18</sup> Combat tours were limited to one year and command tours as little as six months. It is not hard to imagine that experienced commanders were difficult to cultivate in this type of rotational system. Newly arriving commanders were thrust into combat without the benefit of any experience recently

acquired by their predecessors. Perhaps the generation and war gaming of options by a temporarily more experienced staff proved to be a workable solution under the circumstances.

Summary. The proposed combat decision-making process emphasizes the recognition-primed decision-making (RPD) model. RPD challenges the analytical approach of generating and concurrently evaluating options affirmed by the deliberate process. RPD advocates that the best COA will more than likely be the first COA that an experienced decision maker develops; until new or changing information is later received. Even when an experienced decision maker generates options, he will still validate each one in a serial or sequential fashion. The tendency still exists that the first COA he generates will be sufficient to meet the circumstances. This occurs because the decision maker relies on his previous experience and certain informational queues within that environment to influence what he should do.

The proposed combat model builds upon RPD and challenges the deliberate process when also performed as a fully integrated commander/staff methodology. If the commander is the most experienced decision maker, then he is the most suitable individual to conceptualize a COA. Experience and recognition of the environment is crucial. The staff's "less experienced" efforts to generate options for purposes of comparison are essentially wasted energy. Even when presented with the options, a commander will probably rely on his wealth of experience to shape one of the COAs to closely resemble something he would have developed in the first place. If the commander's initial "gut call" is likely to be the best option, then the proposed combat model advocates

that the staff is better utilized refining that plan rather than generating options.

The deliberate model remains, for the purpose of this thesis, unchallenged when planning time is unconstrained; such as OPLAN development at higher echelons when a C-Day is unknown. The deliberate process may also prove to be superior in time-constrained environments under the circumstances. The first exists when the commander is not the most experienced member of the commander/staff team. In this situation, options generated by the staff, or a more experienced individual on the staff, may prove to be more beneficial. This does not negate RPD, however, because "experience" is still shaping the COAs. In this case the experience rests with the staff or a single staff member.

The second situation occurs when the nature of the environment is foreign to both the commander and staff and nullifies any previous experiences. It is hard to imagine an example of this except, perhaps, in certain operations other than war environments. Needless to say, in these situations the collective team effort to find solutions may prove better than the efforts of a single individual--even if he is the commander.

#### A Flexible Process

In addition to being comprehensive, the draft doctrine espouses that the decision-making process must also be flexible. This flexibility allows the commander to adjust the process as necessary to accommodate time-constrained environments. Draft FM 101-5 defines a flexible process:

Commanders abbreviate or modify the estimate process to accommodate the urgency of the situation and time available. The judgment and experience of the commander will dictate how he adjusts the application of the process. (This applies throughout the entire operation.)<sup>19</sup>

Draft FM 101-5 further states that several possibilities exist for the commander to abbreviate the deliberate process, as long as none of the steps are skipped. The doctrine also implies that the greater the commander's experience and expertise, the greater his flexibility in abbreviating the process:

Any abbreviated or accelerat[ed] planning process requires the commander to have a high level of expertise, intuition, creativity, and battlefield awareness. . . . The commander has several options that he may choose to abbreviate the process. He may save time by shortening or foregoing an indepth estimate, other than what has been accomplished previously. The commander may limit the number of COAs for development and subsequent analysis; and he may choose to prescribe an abbreviated method in the unit SOP. . . . The commander must insure that the process is under his control and steps within that process are not arbitrarily ignored.<sup>20</sup>

Whatever manner the commander chooses for streamlining or abbreviating the process, doctrine goes on further still to explain that two parts of the process must never be ignored:

Regardless of how the commander chooses to abbreviate the decision-making process, two areas he should always include are war gaming and risk assessment. War gaming provides the opportunity to synchronize the BOS across the COA. . . . Risk assessment must be done to ensure a solution to a task or set of tasks will not render the force incapable of anticipated operations.<sup>21</sup>

Essentially, the doctrine prescribes that a commander may abbreviate the process but he must not skip any steps, and he should always include war gaming and risk assessment. These parameters limit the commander's "flexibility" to a choice of developing fewer COAs or spending less time on completing a given step. As discussed in chapter two, this description of how to make the process flexible is not helpful

to commanders in the field.<sup>22</sup> The doctrine fails to provide any detail on exactly "how" any one of the given steps in the deliberate process may be shortened. The doctrine simply leaves this to the "experienced" commander to determine what is best. Again, this was cited as a complaint by many commanders.<sup>23</sup>

Time Analysis. The question to address then is whether this same problem exists in the proposed combat process, or does it offer greater flexibility? Comparing both processes in a simple time analysis may reveal which offers greater flexibility. Flexibility being defined as the right balance between efficient use of time and thoroughness before the commander decides on a course of action.

Recall the number of steps in each process. The DDMP has nine principle steps, while the proposed combat model has eight. By assigning independent variables to each step, it may be possible to create a math model that represents the required time to complete either process. Because some of the steps are essentially the same for both process, those variables will also be respectively the same. Estimated values for the time required to complete an individual step can be given to each variable. Assigning arbitrary values of time to each variable may reveal a better look at the total requirement to complete the process. This may offer a further understanding of how time-constraints limit a commander's flexibility to adjust the process.

The same parameters just reviewed in the doctrine (cannot skip any steps, and war gaming/risk analysis must not be excluded) will apply to the proposed combat model. For the purpose of this analysis, the scenario cited earlier will serve as the example for the deliberate

process. Again, recall from the proposed combat model that the commander develops a single course of action against what he believes to be the enemy's most likely course of action. The diagrams on the following page offer an example of the two processes.

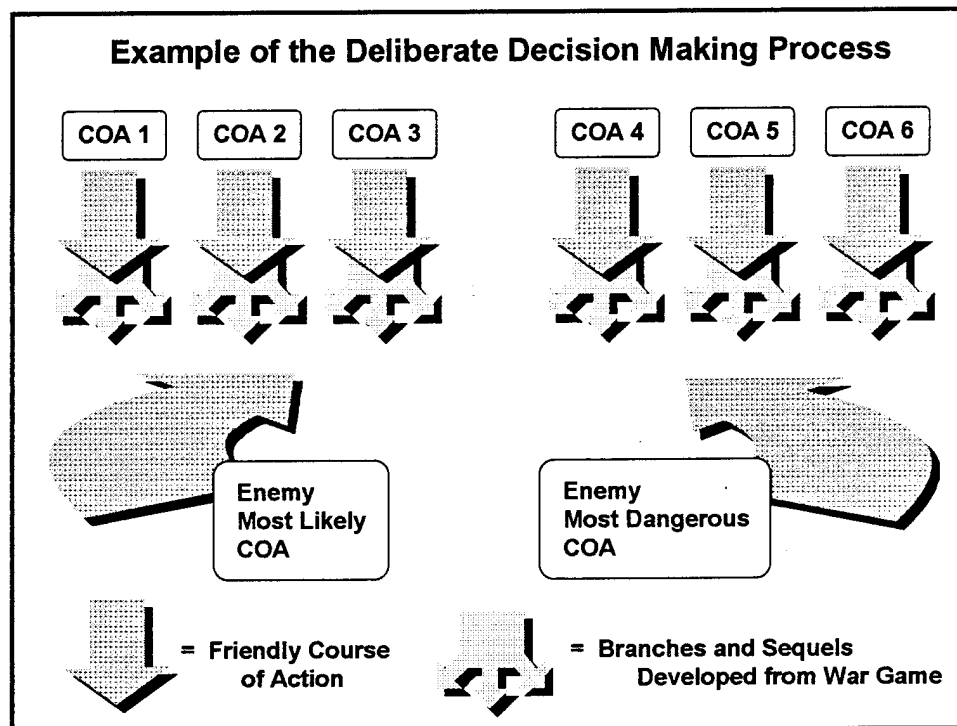


Fig. 12. Example of the Deliberate Decision-Making Process.

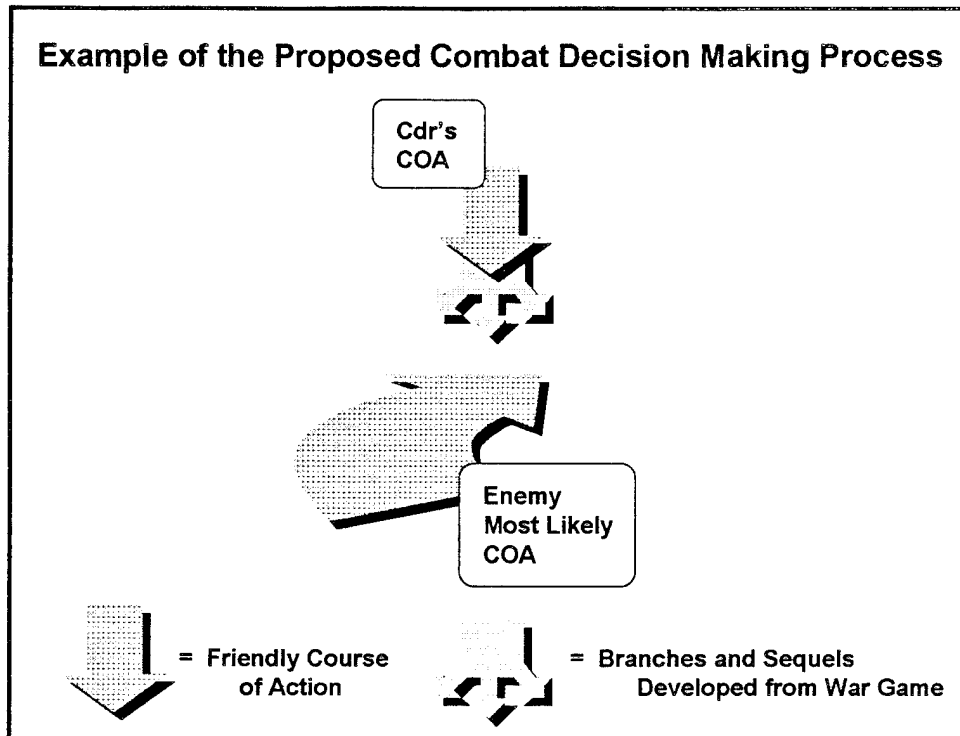


Fig. 13. Example of the Proposed Combat Decision-Making Model.

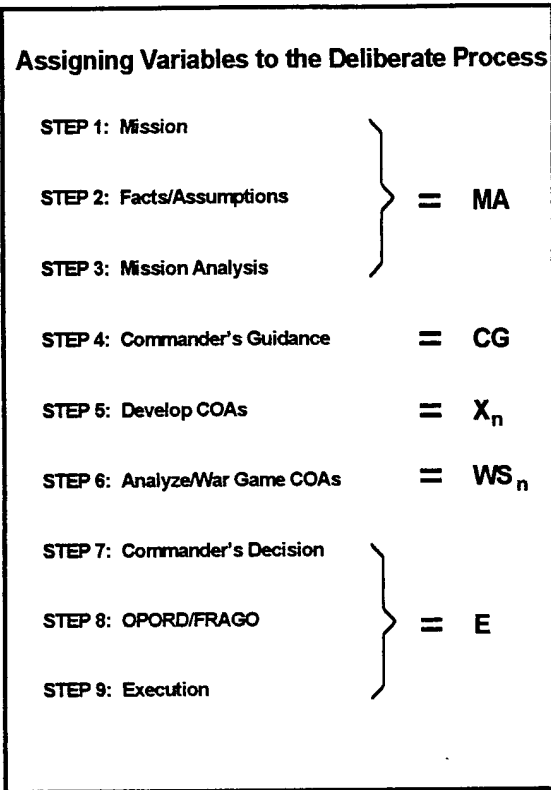


Fig. 14. Assigning Variables to the Deliberate Decision-Making Process.

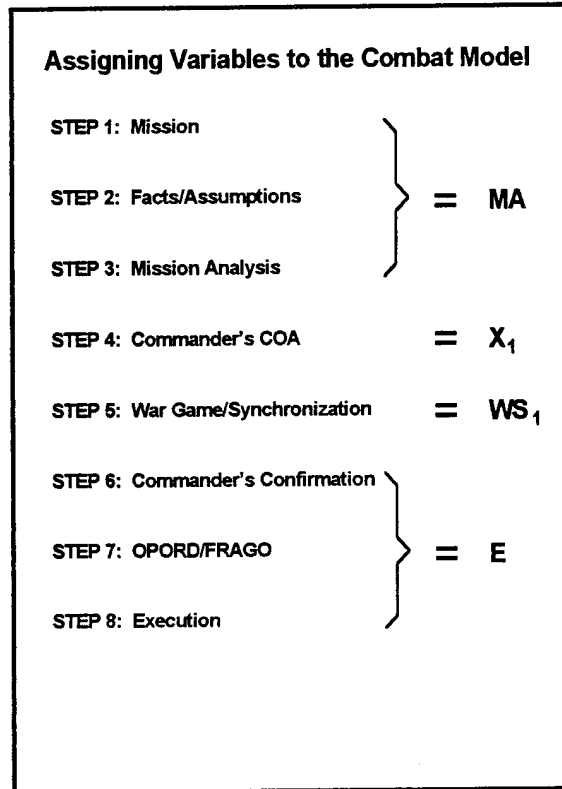


Fig. 15. Assigning Variables to the Combat Decision-Making Model.

As depicted above, variables have been assigned to each step or combination of steps in both processes. Note that there is no difference in the first three steps of either process as discussed in chapter three. Thus, the combination of these first three steps is assigned the variable "MA." STEP 4 in the deliberate process, issuing commander's planning guidance, is unique to that process. It is assigned the variable "CG."

Note that in both processes the amount of time required to develop a course of action is assigned the variable "X." Because the commander develops only one COA in the combat model, it is more

accurately represented by the variable " $X_1$ ." Multiple COAs are generated in the deliberate model. The number of options is " $n$ ", therefore this step is represented by the variable " $X_n$ ."

In the combat model there is only one COA, therefore there is a need for only one war gaming/risk assessment event that corresponds to the COA. This variable is " $WS_1$ ." However, in the deliberate model there are " $n$ " number of potential COAs, and thus an " $n$ " number of war gaming/risk assessment events that correspond to each. STEP 6 in the deliberate process does involve slightly more than war gaming/risk assessment events for each COA, but assume that the additional time required for comparing COAs is insignificant. The difference now, between STEP 5 in the combat model and STEP 6 in the deliberate process, is the number of events in each. This variable is " $WS_n$ " in the deliberate process. Again, because the last three steps in both processes are essentially the same, as discussed in chapter three, these combination of steps are assigned the variable " $E$ ."

With variables assigned to each step or combination of steps, each process is represented as follows:

$$MA + CG + X_n + WS_n + E = \text{Deliberate Decision-Making Process}$$
$$MA + X_1 + WS_1 + E = \text{Proposed Combat Decision-Making Model}$$

Using the example provided earlier with two enemy COAs and six friendly COAs, the deliberate process would then be represented by the following model:

$$MA + CG + X1 + X2 + X3 + X4 + X5 + X6$$

$$+ WS1 + WS2 + WS3 + WS4 + WS5 + WS6 + E = \text{Total time}$$

Both models are further simplified below:

where  $n = 6$  COAs;

$$MA + CG + n(X + WS) + E = \text{Total Time for Deliberate Process}$$

$$MA + X + WS + E = \text{Total Time for Proposed Combat Model}$$

Next, assign values that approximate the estimated time to complete each event: (NOTE: These values are arbitrary, and any value deemed reasonable to complete each event may be used.)

$$MA = 2.0 \text{ hours}$$

$$CG = .5 \text{ hours}$$

$$X = 1.0 \text{ hours}$$

$$WS = 3.0 \text{ hours}$$

$$E = 6.0 \text{ hours (amount of time to produce the order and disseminate to subordinate units)}$$

Using the assigned values, the total time to complete each process in this example is calculated:

$$MA + CG + 6(X + WS) + E = \text{Total Time for Deliberate Process}$$

$$2.0 + .5 + 6(1.0 + 3.0) + 6.0 = \underline{32.5 \text{ hours}}$$

$$MA + X + WS + E = \text{Total Time for Proposed Combat Model}$$

$$2.0 + 1.0 + 3.0 + 6.0 = \underline{12.0 \text{ hours}}$$

In this example the difference in total time to complete each process is 20.5 hours. It would appear that the proposed combat model offers a distinct advantage. Does time saved, however, necessarily provide greater flexibility? In the deliberate model five additional courses of action were developed and war gamed in addition to the COA that was selected. Draft FM 101-5 states, "Courses of action considered but not selected could be options for branches if necessary."<sup>24</sup> In this example the deliberate process yields a selected COA and five potential solutions for possible branches; assuming the five COAs adequately address the branches identified from the selected COA. The proposed combat model yields a single COA, with potential branches and sequels identified but not yet war gamed. The deliberate process now appears to offer the greatest flexibility because there are five additional options to choose from if the primary COA becomes unfeasible.

It is highly unlikely, however, given the complexity of combat that all the "non-selected" COAs would neatly address the branches and sequels identified from the selected COA. It is hard to imagine that at all remaining COAs would be so masterfully anticipated. In this case, any COA along with its associated war gaming event that is discarded becomes wasted staff energy. As COAs are discarded, it is quite possible that branches and sequels remain from the selected COA that still remain to be addressed. This would be the opposite affect of flexibility desired by commanders. In the example of the deliberate process, it takes 30.5 hours to communicate an order to the subordinate units and possible contingency planning still remains to be addressed.

Consider the example of the combat model. It takes 12.0 hours to communicate an order to the subordinate units, although without potential branches and sequels adequately addressed. In the 20.5 hours time saved from not using the deliberate process, the commander now has greater flexibility to address the more accurately identified branches and sequels from his own unique COA. In fact, the commander now has any number of options he can exercise. For example, he may choose to prioritize the war gaming of potential branches and sequels, front load more planning effort into his developed COA, or spend the additional time on actual preparation. Whatever the commander chooses, the proposed combat model affords this additional flexibility because it does not waste energy on COAs that are potentially discarded.

For the sake of argument, assume in the example of the deliberate process, all five of the remaining COAs adequately address the branches and sequels identified in the chosen COA. However, the commander has less than the required 30.5 hours to communicate an order. Recall that doctrine dictates that a commander may not skip any steps, nor should he ignore the importance of war gaming. Doctrine further states:

The commander has several options that he may choose to abbreviate the process. He may save time by shortening or foregoing an indepth estimate, other than what has been accomplished previously. The commander may limit the number of COAs for development and subsequent analysis. . . . Under extreme time constraints the commander will perform the mission analysis himself and provide the staff with the restated mission and his intent.<sup>25</sup>

In this situation, the commander's flexibility is defined as less time spent on each step. If the commander still keeps the original six COAs in the example, it is not hard to imagine the quality of the

effort now given to each. Even if he reduces the number of COAs, the commander still limits his flexibility by waiting until the remaining COAs are war gamed before communicating the order. If he decides to save time by not war gaming, something doctrine says is critical, he endangers his ability to visualize the end result. Forced to stick by the doctrinal process, the commander's flexibility is essentially less effort giving to selected steps. Again, not hard to imagine the quality of the decision, or the energy devoted to preparation as the commander's time becomes increasingly constrained.

Summary. In time-constrained environments the available time to perform mission analysis and communicate a COA is critical. Flexibility to the commander should be more than an issue of saving time; it should also be an issue of thoroughness. Any "flexible" process must attempt to strike the right balance. The deliberate process appears to compensate on the side of "thoroughness", while the proposed combat model appears to be much quicker.

In the deliberate process, flexibility is afforded to the commander by giving him numerous potential options and allowing him to visualize the outcome of each. If the staff is fortunate enough to anticipate that the non-selected COAs will address potential branches and sequels, then all the better. Even when none of the non-selected COAs are kept, however, the commander still retains some flexibility by seeing as many potential outcomes as possible. When less planning time is available, doctrine purports spending less time on individual steps or reducing the number of COAs. A process characterized earlier by its thoroughness, in this situation would arguably force commanders to make

difficult choices. Again, making these choices without doctrinal guidance is a recurring complaint from the field.<sup>26</sup>

The proposed combat model offers flexibility by communicating a COA much sooner than the deliberate process. The commander is not necessarily forced to spend less time on individual steps, but he is making a decision without exploring other options. The proposed combat model, however, should not deny him the eventual opportunity to further develop potential branches and sequels. Coming back to the process after communicating an order to subordinate units allows the commander to better prioritize the planning effort on remaining branches and sequels; negates any wasted staff energy on discarded options; and/or gives him a choice to spend the balance of time solely on preparation.

#### A Continuous Process

Along with comprehensive and flexible, doctrine also purports that a process must be continuous. A continuous process is one that rapidly assimilates new or changing information, without rendering all previous effort completely ineffective. Draft FM 101-5 defines a continuous process:

The demand on the C<sup>2</sup> system is continuous as opposed to cyclical. The estimates are as thorough as time and circumstances permit. The commander and staff must constantly collect, process, and evaluate information. The process does not have an ending point and is revised continuously as factors affecting the operation change, new facts are recognized, assumptions replaced by facts or found invalid, or a changes to the mission are received or indicated.<sup>27</sup>

Uncertainty and Changing Information. In comparing both the deliberate process to the proposed model, it is important to consider the impact that continuously changing information may have on either

process. The nature of combat is undeniably uncertain. New and changing information presented as events unfold may render previous assumptions invalid or completely negate the enemy's anticipated COA.

Draft FM 101-5 further states:

DDMP is not easily used in a rapid, crisis situation where time is critical. Once operations have commenced, circumstances may make it difficult or impossible to always use the DDMP. The most detailed estimates cannot anticipate every possible branch or sequel, every action of the enemy, or changes in mission directed from higher headquarters. Even the most successful operation may "outrun" the initial plan under continuous operations.<sup>28</sup>

When this situation occurs, as it undoubtedly will in future combat environments, does the process become ineffective? Consider the math model of both processes previously discussed:

$$MA + CG + 6(X + WS) + E = \text{Total Time for Deliberate Process}$$

$$2.0 + .5 + 6(1.0 + 3.0) + 6.0 = \underline{32.5 \text{ hours}}$$

$$MA + X + WS + E = \text{Total Time for Proposed Combat Model}$$

$$2.0 + 1.0 + 3.0 + 6.0 = \underline{12.0 \text{ hours}}$$

New or changing information injected into the planning process may either be anticipated or completely unexpected. In the first case, when anticipated information is verified, the deliberate process more easily adjusts without significant interruption. Assuming that the anticipated information was considered in one of the five remaining COAs developed and war gamed, the commander now has the option to change his decision. Because all the COAs were developed and war gamed with equal effort, this adjustment is relatively simple and without any noticeable departure from 30.5 hours to complete the process.

In the proposed combat model, whether the information is anticipated or not, when information is received that invalidates the COA the process must now start over. The worst case would be that the new information is received after the order is issued to subordinates, necessitating the dissemination of a new order. Again, building on the previously used example, and assuming the worst case, the proposed model would now look as follows:

$$MA + X + WS + E + [X_2 + WS_2 + E_2] = \text{Total Time for Combat Model}$$

$$2.0 + 1.0 + 3.0 + 6.0 + [1.0 + 3.0 + 6.0] = \underline{22.0 \text{ hours}}$$

In this example the proposed combat model still saves time, even though significant information arrives after the order is published.

In the second scenario involving the deliberate process, where new or changing information was not anticipated by any of the COAs, restarting the entire process becomes intolerable. Again, consider the worst case where significant information arrives after the order is published. Building on the previously used example, the model of the deliberate process looks as follows:

$$MA + CG + 6(X + WS) + E + [6(X + WS) + E] = \text{Total Time for Deliberate Process}$$

$$2.0 + .5 + 6(1.0 + 3.0) + 6.0 + [6(1.0 + 3.0) + 6.0] = \underline{62.5 \text{ hrs}}$$

In this situation, the "continuous" deliberate process that receives late breaking information will probably not survive in tact.

The Targeting Process. An integral and certainly continuous process that is interwoven in the deliberate decision-making process is

"targeting." Though not formally discussed in draft FM 101-5, draft FM 6-20-10, Tactics, Techniques, and Procedures for the Targeting Process<sup>29</sup>, prescribes in detail how targeting relates to the deliberate process. Draft FM 6-20-10, however, does not provide an identifiable step in the process where the commander and staff formally integrate the targeting process. Draft FM 6-20-10 implies that this integration occurs during war gaming, with the final product being a targeting matrix produced by the fire supporters.<sup>30</sup> Regular targeting meetings are then conducted throughout the execution phase to amend or change the targeting board based on new or changing information.

The proposed combat model addresses this lack of discussion of the targeting process by including a formal step that dovetails right after war gaming. This may serve two primary purposes. First, its formal inclusion into the decision-making process reminds both commander and staff of its importance during planning. It is not a process left solely to the fire supporters. It is a process that must be incorporated and formally considered by operational planners at every echelon. Even when the decision process becomes a purely cognitive exercise, the combat model serves to repetitiously ingrain commanders to a proven methodology to that addresses the total enemy picture.

Second, by including a formal step for target integration by the commander and staff team, the combat model creates an established precedence for training. This precedence currently does not exist in the infantry, armor, or aviation schools.<sup>31</sup> Although recognized by the maneuver arms as a viable process, it primarily championed by the field artillery school. Targeting is not routinely taught to officers in the

maneuver branches, except as an elective at Command and General Staff College.<sup>32</sup> The proposed combat model embraces targeting as a proven and effective methodology to keep the decision process continuous. To this end, the combat model attempts to introduce a shift in its focus as a primary task of any tactical planner.

Summary. Both the deliberate process and proposed combat model adjust to new or changing information in potentially different ways. As the doctrine implies, this ability to adjust defines a continuous process. The deliberate process, with its numerous options, perhaps allows for more complete anticipation of enemy events. The danger does exist, however, that new or changing information may render all the generated options unfeasible. If this occurs, considerable time and staff energy is wasted on options that are now discarded. The length of time required to generate and evaluate numerous options, along with the corresponding delay in communicating the order may limit any flexible response.

The proposed combat model focuses on the commander's "feel" for the enemy's most likely course of action. As new or changing information is received, the commander may make modifications to his original COA or develop a new one. The relatively shorter time necessary to arrive at a decision creates greater flexibility if the situation changes, as compared to the deliberate model. Because the proposed combat model anticipates greater uncertainty, there is no wasted effort on generating and evaluating options that may become quickly out-paced by events.

Targeting is a continuous methodology interwoven throughout the deliberate decision-making process. Doctrine prescribes that much of the initial target integration occurs during war gaming.<sup>33</sup> Subsequent targeting meetings occur may occur later in the planning process or during execution. War gaming by nature may not be a comprehensive look at the entire battlefield, but rather focused on critical events.<sup>34</sup> As such, the initial targeting integration done during war gaming may be incomplete. The proposed combat model provides for a formal step in the process, if time allows, where the entire staff can complete the required integration. This change to the DDMP in the combat model clearly establishes when the commander and staff should attempt to complete this initial integration. Including this formal step may ingrain targeting as a methodology that should be led more by commanders and not by fire supporters.

#### A Process Focused on the Future

A process that is focused on the future allows the commander to continuously anticipate events. Despite a commander's involvement with the current battle, he is always looking ahead to the next fight. He must be able to see both the envisioned end state and future state of his force. If the end state evolves, as may happen in uncertain environments, then he must possess the opportunity to reassess and adapt. Draft FM 101-5 defines a process that is focused on the future:

Doctrinal emphasis is on making decisions influencing the outcome of the operation and resulting in arriving at the visualized end state. Connectivity must exist between current operations and future plans. While a portion of this future state may be directed by the higher level commander, the commander must possess the ability to envision his organization's future state.<sup>35</sup>

In fluid environments, such as operations other than war, the envisioned end state may evolve or change completely. Though this realization may arrive through new or changing information, it has much greater impact than requiring a different COA. An evolved or changed end state may completely affect the commander's original mission analysis. The decision process must not allow the commander to be trapped by his original assessment of the situation. An effective decision-making process stimulates the commander to constantly reassess both his environment and his envisioned end state. This keeps him "focused on the future."

A Cyclic Process and Staff Battle Drills. The method prescribed in doctrine for keeping commanders focused on the future is called, Concept, Planning/Preparation, Execution and Assessment (CPEA) Methodology. It represents a cyclical, mental process for commanders to continuously reevaluate the envisioned end state and its impact on future operations. It is prescribed in four major elements:<sup>36</sup>

- (1) Assessment of the outcome of current operations.
- (2) Conceptual possibilities for future operations.
- (3) Planning and preparation of the operation.
- (4) Execution of the operation; followed again by assessment.

Draft FM 101-5 further describes the intent of the CPEA methodology:

The battle commander's goal is to always maintain the initiative and anticipate the outcome of the current fight in order to begin considering future requirements and actions. His movements on the battlefield, plus the focused information (CCIR, PIR) he receives from his staff and senior commanders, allow him to continuously update his assessment of the current operation and make adjustments, to the next event (branch or sequel).<sup>37</sup>

This description of a cyclic, mental process concludes deliberate decision-making in draft FM 101-5. No further discussion is offered about the mechanics of "how" this process of continuous assessment should work beyond the cognitive domain.

In contrast, the proposed combat model attempts to offer a working methodology for continuous assessment involving the entire commander/staff team. Note the arrow that brings the execution step back to mission analysis in figure 16 on the next page.

As discussed in chapter three, the vehicle used by the staff to assist the commander's continuous reassessment is "staff battle drills." Staff battle drills represent a concerted team effort to synthesize information and provide recommendations for potential friendly actions against a changing enemy situation. The center piece of a staff battle drill methodology is that it is more than just a cognitive process, it involves every member of the staff in a focused effort; to discern "what" new developments on the battlefield may mean and "how" the command can react.

Again, much like the discussion of the targeting process, the staff's participation in helping the commander anticipate the next event is implied in the deliberate process. Staff battle drills, perhaps, serve more as a technique to facilitate this participation, rather than an explanation of new doctrine. Similar to the discussion of the targeting process, illustrating in the model where this cyclic reassessment occurs and providing a vehicle for its execution may reinforce its application. Limiting CPEA methodology to merely a

cognitive process, may provide limited value as commanders and staffs train for war. As mentioned previously, this ability for commanders and staffs to continuously reassess an evolving or changing end state is crucial; especially in other than war environments.

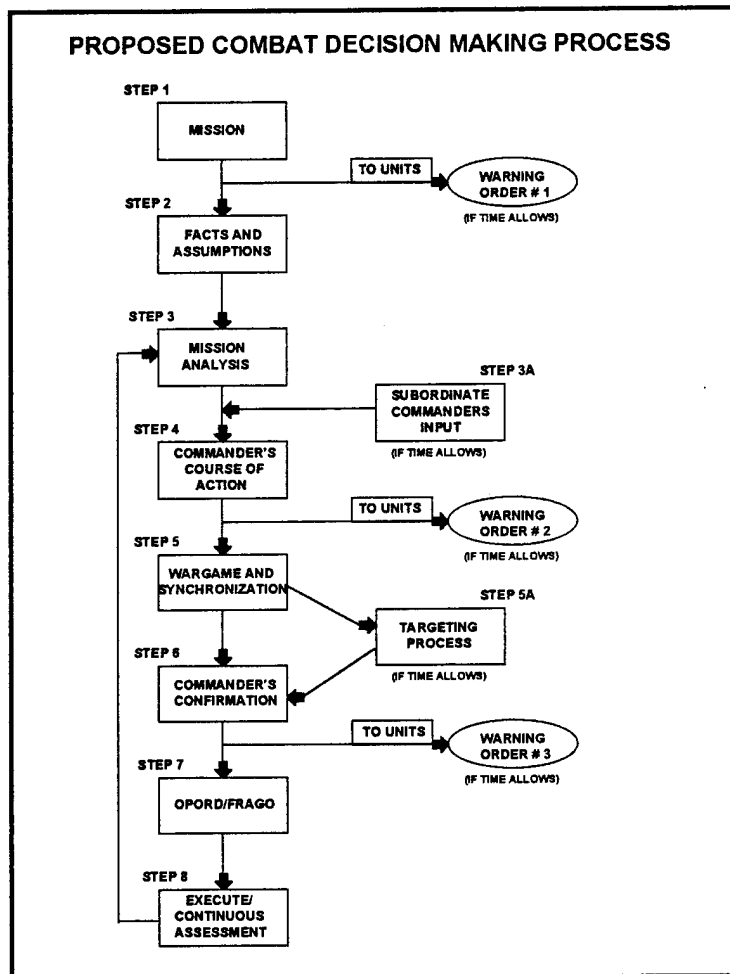


Fig. 16. The Proposed Combat Decision-Making Model.

Summary. No discussion concerning the actual application of CPEA methodology exists in doctrine, beyond the prescribed cognitive framework. The proposed combat model provides a potential solution.

Numerous techniques and options are offered concerning actual application of certain doctrinal steps (i.e. war gaming).<sup>38</sup> Without a similar discussion of potential techniques, the proposed combat model recognizes that this methodology might be lost during execution. A prescribed process that brings commanders continuously back to mission analysis prevents them from becoming trapped by their initial assessment. The enemy, and perhaps the end state, will change and present new challenges during combat. Remaining fixed on the original direction developed at the beginning of the planning process may lose the initiative. Staff battle drills get the entire staff involved and help keep the commander focused on the future.

### Endnotes

<sup>1</sup>U.S. Army, FM 101-5 (draft), Command and Control for Commanders and Staff (Washington, DC: Department of the Army, 1995), 4-5 - 4-6.

<sup>2</sup>Ibid.

<sup>3</sup>Ibid., 4-28.

<sup>4</sup>Ibid., 4-37.

<sup>5</sup>Ibid., 4-28.

<sup>6</sup>Gary A. Klein and Roberta Calderwood, Investigations of Naturalistic Decision Making and the Recognition-Primed Decision Model (Alexandria, VA: U.S. Army Institute for the Behavioral and Social Sciences, 1990), 13.

<sup>7</sup>FM 101-5 (draft), 4-6 - 4-7.

<sup>8</sup>Klein and Calderwood, 11-20.

<sup>9</sup>Ibid.

<sup>10</sup>Ibid., 13-14.

<sup>11</sup>Ibid., 11-20.

<sup>12</sup>Ibid., 14-15.

<sup>13</sup>Ibid., 15.

<sup>14</sup>FM 101-5 (draft), 4-28.

<sup>15</sup>Ibid., 4-17.

<sup>16</sup>Ibid., 4-22.

<sup>17</sup>Klein and Calderwood, 11-20.

<sup>18</sup>Rex R. Michel, Historical Development of the Estimate of the Situation (Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1990), 9-10.

<sup>19</sup>FM 101-5 (draft), 4-5 - 4-6.

<sup>20</sup>Ibid., 4-65 - 4-66.

<sup>21</sup>Ibid., 4-66 - 4-67.

<sup>22</sup>James W. Lussier and Douglas J. Litavec, Battalion Commanders Survey: Tactical Commanders Development Course Feedback (Alexandria, VA: Army Research Institute for the Behavioral and Social Sciences, 1992)

<sup>23</sup>Ibid.

<sup>24</sup>FM 101-5 (draft), 4-24.

<sup>25</sup>Ibid., 4-66.

<sup>26</sup>Lussier and Litavec.

<sup>27</sup>FM 101-5 (draft), 4-6.

<sup>28</sup>Ibid., 4-65.

<sup>29</sup>U.S. Army, FM 6-20-10 (draft), Tactics, Techniques and Procedures for the Targeting Process (Washington, DC: Department of the Army, 1995).

<sup>30</sup>Ibid., 2-4.

<sup>31</sup>LTC James D. Pankey, interview by author, Fort Leavenworth, Kansas, 24 April 1995.

<sup>32</sup>Ibid.

<sup>33</sup>FM 6-20-10 (draft), 2-7 - 2-15.

<sup>34</sup>FM 101-5 (draft), 4-44.

<sup>35</sup>Ibid., 4-6.

<sup>36</sup>Ibid., 4-67.

<sup>37</sup>Ibid.

<sup>38</sup>Ibid., 4-42.

## CHAPTER FIVE

### CONCLUSIONS AND RECOMMENDATIONS

#### Conclusions

The current field of research purports that two distinctly different cognitive strategies exist for decision-making--optimizing and satisficing. An "optimizing" strategy is considered the more traditional analytical approach. All available information is used to generate conceptual possibilities that will solve a particular tactical problem. The decision maker concurrently evaluates all the generated options and selects what he believes to be the best solution. This "best" solution is considered the "optimal" choice under the given conditions.

A "satisficing" strategy challenges the more traditional analytical approach. Satisficing advocates that experienced decision makers do not generate or conceptualize numerous options and evaluate them concurrently; especially in stressful, time-constrained environments. Satisficing theory states that a decision maker considers all available information, looks for certain informational queues within the given environment and relies on his experience to generate a single option that satisfies the conditions. This first developed option is then evaluated using a cognitive process known as "progressive deepening." As new or changing information develops, the decision maker modifies, dismisses or develops a new option. This is done in a serial

fashion until an option satisfies the problem and/or adequately addresses all known branches or sequels; similar to the way chess grandmasters evaluate their next move as noted in chapter two.<sup>1</sup>

Though both cognitive strategies suggest completely different theories as to how decision makers arrive at solutions, insufficient evidence exists to discount the accuracy of either model. Little discussion is provided in the current field of research, however, as to whether "satisficing" holds up when the decision maker is not under stress and planning time is unconstrained. Satisficing appears to be a cognitive process that applies more to stressful, time-constrained environments.

The Deliberate Decision-Making Process (DDMP) as prescribed in draft FM 101-5 uses the traditional analytical approach of "optimizing" as its cognitive framework. According to the draft doctrine, it is the only accepted decision-making process advocated, regardless of the available time. Whether planning time is relatively unconstrained or the decision maker has less than one hour, no other decision-making process is provided. The doctrine willingly acknowledges that DDMP will not work in all situations:

DDMP is not easily used in a rapid, crisis situation where time is critical. Once operations have commenced, circumstances may make it difficult or impossible to always use the DDMP. The most detailed estimates cannot anticipate every possible branch or sequel, every action of the enemy, or changes in mission directed from higher headquarters. Even the most successful operations may "outrun" the initial plan under continuous operations.<sup>2</sup>

Evidence indicates that future combat environments will be characterized by fluid and continuous operations, where information remains uncertain or ambiguous. It is difficult to understand how

doctrine can suggest a decision-making process that it acknowledges will not hold up in future combat environments, yet at the same time provide little discussion on alternative solutions. The review of literature and existing research indicates that this lack of discussion, beyond simple techniques to abbreviate the process, is insufficient for many commanders and staffs in the field.

The proposed combat decision-making process may offer an alternative to the DDMP in uncertain and time-constrained situations. Recognition-Primed Decision Making (RPD) as discussed by Klein and Calderwood<sup>3</sup>, builds on the theory of satisficing and forms the cognitive framework for the proposed model. RPD suggests that in fluid, time-constrained environments, the first COA generated by an experienced decision maker will be similar to the COA he would have chosen from numerous generated possibilities. Experience within the given environment, more than the number of available options, dictates the preferred COA. Using RPD as the basis for a cognitive framework, the proposed model also incorporates three additional suggested improvements; (1) provide for the formal inclusion of subordinate commanders' input; (2) include a formal step where targeting integration should initially occur; and (3) illustrate how a proposed combat process provides for continuous and cyclic assessment using staff battle drill methodology.

Research indicates that DDMP evolved into its current staff oriented, product-centered methodology during the Vietnam era.<sup>4</sup> Additional products derived from the process were later added with the publication of both ST 100-9 and ST 101-5 at the Command and General

Staff College.<sup>5</sup> Evidence also indicates that the current DDMP is not flexible enough and rarely survives intact when observed or studied in the field; especially in time-constrained conditions.

The generation of options espoused by DDMP, however, may have three significant advantages under certain conditions. The first occurs when the commander has the same relative experience as his staff. The second occurs when the nature of the environment is completely foreign. In this situation, the combat environment is so radically different that it negates any previous expectations or experience known by either the commander or staff. The third, and perhaps most significant, advantage to DDMP is that it remains unchallenged when planning time is unconstrained. Whether the commander has significantly more experience than his staff, when time is not a factor an analytical approach aimed at finding the optimal solution may prove superior to a satisficing strategy.

Despite the advantages offered under these unique conditions, evidence suggests that DDMP may not prove adequate under the most likely scenarios of combat planning; in uncertain and time-constrained environments. DDMP may remain too focused on selecting the "best" option, while the proposed combat model focuses more on the speed at which a "satisfactory" decision can be achieved. In fluid, uncertain environments where information constantly changes, the difference between "best" and "satisfactory" may prove insignificant. It is difficult to measure the merits of arriving at a "satisfactory decision" much earlier than a perhaps an "optimal decision." Again, observations from the field suggest that commanders prefer the flexibility to make

decisions quicker, rather than continue the search for an optimal solution when time is critical.

Draft FM 101-5 states that war gaming is the most time consuming part of the decision-making process.<sup>6</sup> Evidence suggests that the tendency in DDMP is to war game COAs for the purpose of evaluating the best option. Further consideration of potential branches and sequels occurs once the optimal COA is selected. Because more time and effort is devoted to the concurrent evaluation of options, little time or effort may remain for careful consideration of branches and sequels. The proposed combat decision model conducts war gaming for the expressed purpose of refining the commander's singly developed COA. As such, the balance of time saved by not generating options may be devoted to potential branches and sequels.

The formal inclusion of subordinate commanders' input and targeting integration appear to offer some advantages. These two steps are currently integrated into the proposed combat decision model. It is possible that despite any mention of an alternative decision-making process, these two steps would also improve the current DDMP if included. Though not discussed in draft FM 101-5, no evidence exists to suggest that formally including these two steps to the DDMP format would significantly alter the current process.

Finally, adopting the use of a staff battle drills may provide a doctrinal technique to implement CPEA methodology as prescribed in draft FM 101-5. Draft FM 101-5 initially prescribes that the decision-making process must be continuous versus cyclic.<sup>7</sup> The nature of Concept, Planning/Preparation, Execution and Assessment (CPEA) Methodology is,

however, both a continuous and cyclic assessment. The adoption of staff battle drills as a doctrinal technique may serve to make CPEA more than a cognitive process of the commander, but an integrated commander and staff team effort.

#### Recommendations

The proposed combat decision-making process appears to provide greater flexibility to commanders in both fluid and time-constrained environments. As such the following recommendations are provided:

1. The current deliberate decision-making process should be used when planning time is relatively unconstrained.

2. Amend draft FM 101-5 to include the proposed model as a second decision-making process when planning time is limited.

3. The decision when to use either decision-making process should remain at the commander's discretion based on the given conditions and available planning time.

4. Because the focus at Battle Command Training Program (BCTP) and the Combat Training Centers (CTCs) remains on tactical planning under simulated combat conditions, the proposed combat decision-making model should become the new emphasis for training. This represents a shift in current training philosophy. The current school of thought is that anyone who can master DDMP will be able to adequately abbreviate the process when necessary. This recommendation suggests that emphasis on the proposed combat decision-making process will more realistically address the conditions that commanders and staffs may face.

5. If adopted, the Combined Arms Training Center and branch specific training centers should evaluate their curriculum to determine if a discussion and/or instruction of both decision-making processes is warranted.

#### Recommendations for Further Research

The following recommendations for further research are provided:

1. If the proposed combat decision-making process is not adopted, more discussion is needed in FM 101-5 on ways to abbreviate the process.

2. Testing the proposed combat model at one of the Combat Training Centers (CTCs) may yield empirical data to determine the model's validity and acceptance by commanders and staffs.

3. Additional research may determine if the formal inclusion of "subordinate commander's input" would improve the current DDMP.

4. Examine where and how "targeting integration" should take place within the current DDMP. No discussion currently exists in chapter four of draft FM 101-5.

5. Additional research may yield more TO&E and echelon specific "staff battle drills" that are interconnected and complement the current CPEA methodology.

6. Although not discussed in the scope of this thesis, the Army's current training methodology on the DDMP may also yield significant areas of concern that merit further exploration.

### Endnotes

<sup>1</sup>Gary A. Klein and Roberta Calderwood, Investigations of Naturalistic Decision Making and the Recognition-Primed Decision Model (Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1992), 15.

<sup>2</sup>U.S. Army, FM 101-5 (draft), Command and Control for Commanders and Staff (Washington, DC: Department of the Army, 1995), 4-65.

<sup>3</sup>Klein and Calderwood, 1-23.

<sup>4</sup>Rex R. Michel, Historical Development of the Estimate of the Situation (Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1992), 1-15.

<sup>5</sup>Ibid.

<sup>6</sup>FM 101-5 (draft), 4-37.

<sup>7</sup>Ibid., 4-6.

APPENDIX A

EXAMPLE BRIGADE STAFF BATTLE DRILLS

## EXAMPLE BRIGADE STAFF BATTLE DRILLS

	<u>Page</u>
Observations on the Process .....	112
Staff Battle Drill #1: React to Enemy Ground Contact .....	113
Staff Battle Drill #2: React to Enemy Indirect Fire (Q36 Drill) .....	117
Staff Battle Drill #3: React to Enemy Military Intelligence Intercept .....	121
Staff Battle Drill #4: React to Enemy Air Defense .....	125
Staff Battle Drill #5: React to Enemy Logistics Site .....	129
Staff Battle Drill #6: React to Enemy Air Threat .....	133
Staff Battle Drill #7: React to Enemy Minefield .....	137
Staff Battle Drill #8: React to Chemical Attack/Threat .....	140

## BRIGADE STAFF BATTLE DRILLS - OBSERVATIONS ON THE PROCESS

The following comments prepared by the author while a member of the Brigade C2 Team, Joint Readiness Training Center, June 1994:

1. Staff battle drills are a guide to speed reaction by the battle staff and prevent fratricides. They are not a lock-step process that robs the battle staff of its intuition and initiative.
2. Primarily, staff battle drills should be enemy focused. All other events in the TOC are normally an exercise in information management.
3. Staff battle drills should serve as a natural extension to the targeting process and utilizes the targeting board to "fill in any missing pieces."
4. Staff battle drills should reference the current FRAGO developed from the most recent targeting meeting.
5. Staff battle drills should not drastically change the current concept of operations unless specifically directed by the commander.
6. Staff battle drills should emphasize that the "terrain owner" has the final say for clearing fires (i.e. brigade does not shoot/execute unless coordinated with the subordinate battalion/manuever force responsible for the sector).
7. Brigade staff battle drills should complement and be integrated with both division (higher) and battalion (lower) staff battle drills.
8. Staff battle drills should be developed on a common checklist that is integrated and tracked by all the battle staff, not separate checklists for each staff member.
9. Keep them simple and easy to execute.
10. Practice at home station and emphasize cross-training. Use a stop-watch.
11. Ensure new or attached staff/slice members get a copy and understand the drills.
12. Always follow up with a readjusted situational template, pattern analysis, and recommendations to the commander of possible enemy reaction.

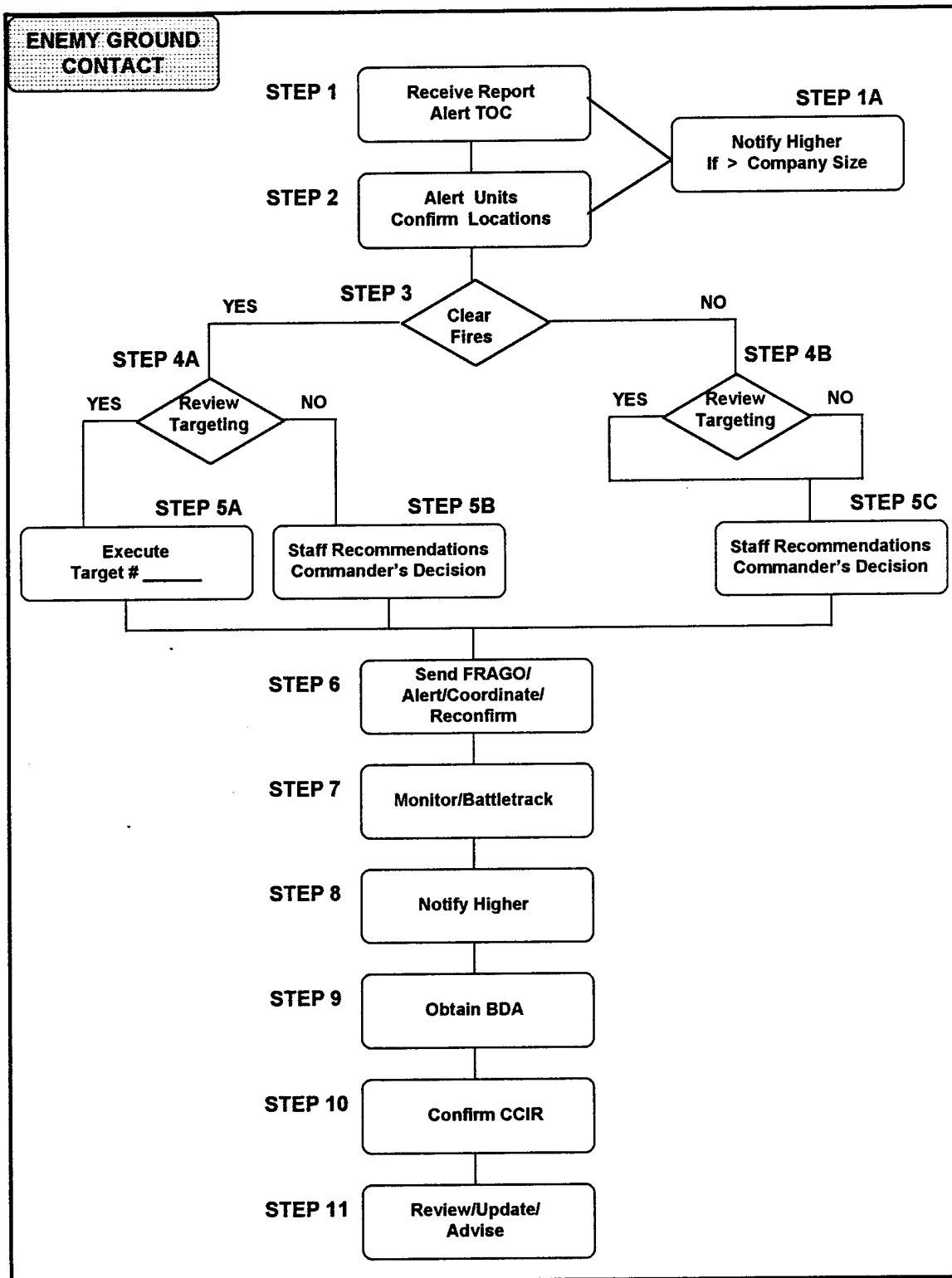


Fig. 17. Brigade Staff Battle Drill #1 - React to Enemy Ground Contact

BRIGADE STAFF BATTLE DRILL #1 - REACT TO ENEMY GROUND CONTACT

ACTION

RESPONSIBILITY

STEP 1

- |  |                         |
|--|-------------------------|
| 1. RECEIVE REPORT. (Size/Activity/Grid/Time)           | ALL                     |
| 2. ALERT TOC; SAY AGAIN REPORT AND CALLSIGN OF SENDER. | PERSON RECEIVING REPORT |
| 3. PLOT LOCATION.                                      | ALL                     |

STEP 1A

- |  |            |
|--|------------|
| 4. IF CONTACT IS COMPANY SIZE OR LARGER IMMEDIATELY NOTIFY HIGHER. | BATTLE CPT |
|--|------------|

STEP 2

- |  |     |
|--|-----|
| 5. ALERT YOUR BOS ELEMENTS; CONFIRM ANY FRIENDLY LOCATIONS CLOSE TO CONTACT. (i.e. MI Cdr alerts/confirm LLVI teams in vicinity, SOCCE alerts/confirm ODA teams in vicinity, ADA Cdr alerts/confirm Stinger teams in vicinity, etc.) | ALL |
|--|-----|

STEP 3

- |   |                              |
|---|------------------------------|
| 6. CONFIRM ALL FRIENDLY UNITS IN A CLOCKWISE DIRECTION; IN TURN, THE STAFF ANNOUNCES IF ITS BOS ELEMENTS ARE CLEAR, UNKNOWN, OR DANGER CLOSE. | ALL                          |
| 7. IF ALL CLEAR; ANNOUNCE ALL CLEAR TO TOC.   | BATTLE CPT                   |
| 8. IF <u>NOT</u> CLEAR, RECORD AND CONTINUE TO OBTAIN STATUS ON APPLICABLE ELEMENT(S); ANNOUNCE THE ELEMENT(S) NOT CLEAR OR DANGER CLOSE.     | BATTLE CPT, APPLICABLE STAFF |

STEP 4A (ONLY IF CLEARED FOR FIRES, OTHERWISE GO TO STEP 4B)

- |  |            |
|--|------------|
| 9. REVIEW TARGETING BOARD; DETERMINE IF CONTACT WAS TARGETED. (i.e. the grid for the actual contact is close to a suspected grid on the targeting board) | BATTLE CPT |
|--|------------|

STEP 5A (ONLY IF ANTICIPATED BY TARGETING, OTHERWISE GO TO STEP 5B)

- |   |                                |
|---|--------------------------------|
| 10. IF ANTICIPATED BY TARGETING, ANNOUNCE THE TARGET #_____ IN EFFECT; POINT TO THE ACTUAL TARGET ON THE TARGETING BOARD; INSTRUCT THE STAFF TO CONFIRM APPLICABLE SUBORDINATE ELEMENTS EXECUTING THE TARGET. | BATTLE CPT<br>APPLICABLE STAFF |
|---|--------------------------------|

11. ADVISE THE APPLICABLE MANEUVER BATTALION OR SUBORDINATE ELEMENTS THAT TARGET #\_\_\_\_\_ IS IN EFFECT; RECONFIRM THEIR ROLE IN EXECUTION. BATTLE CPT  
APPLICABLE STAFF

12. EXECUTE THE TARGET IAW TARGETING BOARD AND LATEST FRAGO. (GO TO STEP 6) BATTLE CPT

**STEP 5B (ONLY IF NOT ANTICIPATED BY TARGETING)**

13. IF NOT ANTICIPATED BY TARGETING, ANNOUNCE TO STAFF THAT TARGETING PROCEDURES ARE NOT IN EFFECT. BATTLE CPT

14. IN A CLOCKWISE DIRECTION, IN TURN THE STAFF ADVISES THE BATTLE CPT OF BRIGADE ASSETS POTENTIALLY AVAILABLE. (i.e. Avn, Armor, Arty, MI, etc.) ALL

15. ADVISE COMMANDER AND REPORT THE STAFF'S RECOMMENDATION OF ASSETS AVAILABLE; OBTAIN COMMANDER'S DECISION. (GO TO STEP 6) BATTLE CPT

**STEP 4B (ONLY IF NOT CLEARED FOR FIRES)**

16. REVIEW TARGETING BOARD; DETERMINE IF CONTACT WAS TARGETED. (i.e. the grid for the actual contact is close to a suspected grid on the targeting board) BATTLE CPT

**STEP 5C**

17. ANNOUNCE TO STAFF WHETHER OR NOT CONTACT IS TARGETED. BATTLE CPT

18. IN A CLOCKWISE DIRECTION, IN TURN THE STAFF ADVISES THE BATTLE CPT OF POTENTIAL SOLUTIONS TO CLEAR FIRES AND/OR BRIGADE ASSETS POTENTIALLY AVAILABLE. (i.e. Avn, Armor, Arty, MI, etc.) ALL

19. ADVISE COMMANDER AND REPORT THE STAFF'S RECOMMENDATION; OBTAIN COMMANDER'S DECISION. BATTLE CPT

**STEP 6**

20. SEND NEW FRAGO IF COMMANDER DECIDES TO CHANGE CURRENT CONCEPT OF OPERATIONS. BATTLE CPT

21. ALERT, COORDINATE, RECONFIRM ANY COMMITMENT OF BRIGADE CONTROLLED ASSETS. (Anticipate MEDEVAC, Maintenance Evacuation, Resupply, LZs, Routes, etc.) BATTLE CPT  
APPLICABLE STAFF

**STEP 7**

22. MONITOR AND BATTLETRACK THE FIGHT. ALL

**STEP 8**

23. NOTIFY HIGHER.

BATTLE CPT/S2

**STEP 9**

24. OBTAIN BDA FROM UNIT IN CONTACT.

BATTLE CPT

-OR-

25. EXECUTE CONFIRMATION OF BDA FROM TARGETING  
BOARD AND FRAGO.

BATTLE CPT

-OR-

26. PROVIDE RECOMMENDATION TO COMMANDER ON METHOD  
FOR CONFIRMING BDA; OBTAIN COMMANDER'S  
DECISION AND EXECUTE.

BATTLE CPT,  
APPLICABLE STAFF

**STEP 10**

27. ANALYZE WHETHER CONTACT CONFIRMS ANY CCIR;  
NOTIFY COMMANDER.

BATTLE CPT/S2

**STEP 11**

28. REVIEW PATTERN ANALYSIS; UPDATE SITMAP AND  
SITUATIONAL TEMPLATE; ADVISE COMMANDER ON  
ANTICIPATED ENEMY REACTION; NOTIFY SUBORDINATE  
UNITS AND, IF APPLICABLE, ADJACENT UNITS;  
UPDATE BDA CHART.

BATTLE CPT/S2

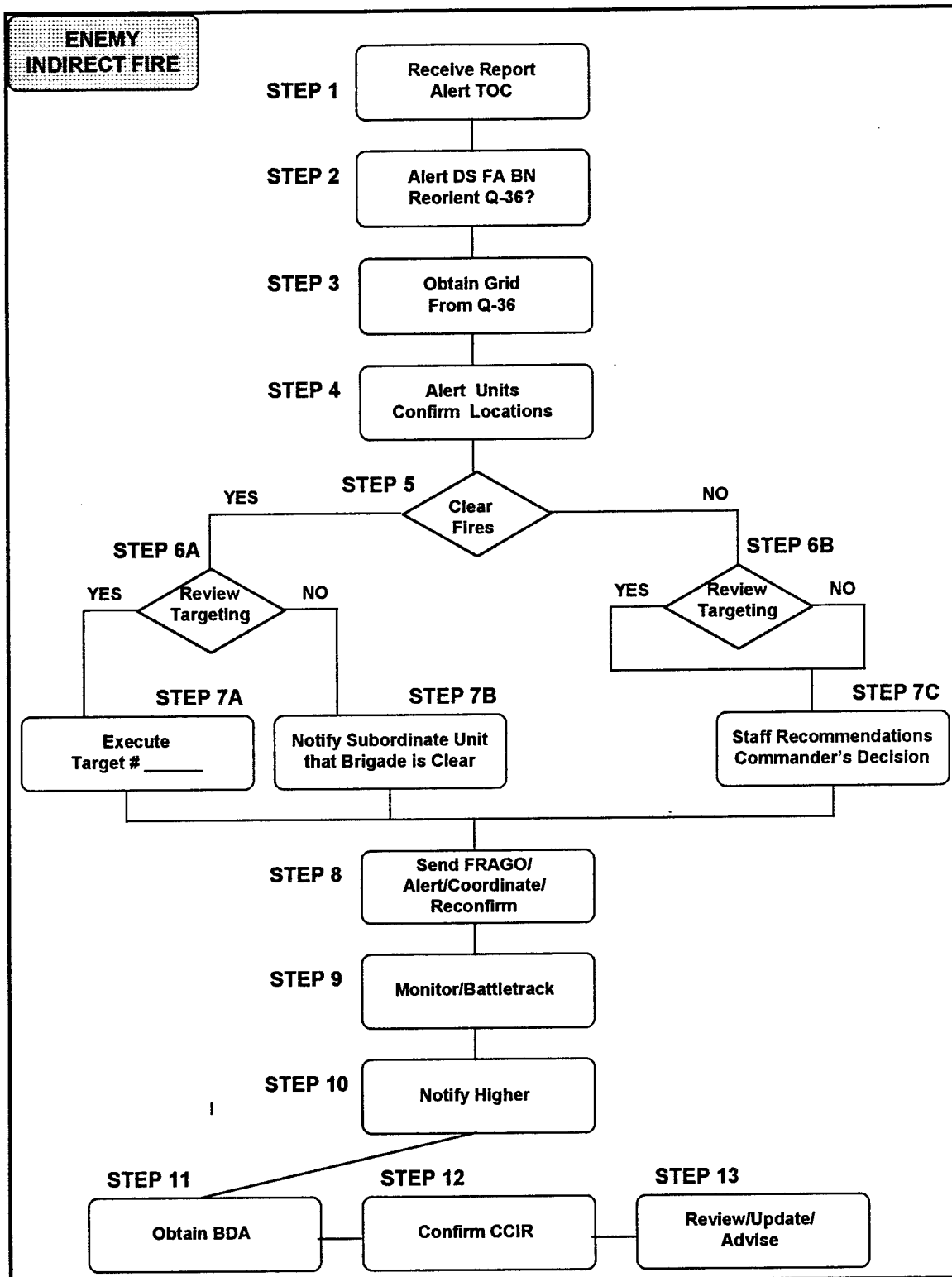


Fig. 18. Brigade Staff Battle Drill #2 - React to Enemy Indirect Fire (Q36 Drill).

BRIGADE STAFF BATTLE DRILL #2 - REACT TO ENEMY INDIRECT FIRE (Q36 DRILL)

<u>ACTION</u>	<u>RESPONSIBILITY</u>
<b><u>STEP 1</u></b>	
1. RECEIVE REPORT. (Size/Activity/Grid/Time)	ALL
2. ALERT TOC; SAY AGAIN REPORT AND CALLSIGN OF SENDER.	PERSON RECEIVING REPORT
3. PLOT LOCATION.	ALL
<b><u>STEP 2</u></b>	
4. NOTIFY DS FA BATTALION (IF Q36 IS NOT REPORTING); REDIRECT Q36 IF REQUIRED.	FSO
<b><u>STEP 3</u></b>	
5. OBTAIN ENEMY GRID LOCATION FROM Q36; ANNOUNCE GRID TO BATTLE STAFF AND IMMEDIATELY REPORT TO RESPONSIBLE SUBORDINATE BATTALION IF LOCATION IS WITHIN FRIENDLY AO.	BATTLE CPT/FSO
<b><u>STEP 4</u></b>	
6. ALERT YOUR BOS ELEMENTS; CONFIRM ANY FRIENDLY LOCATIONS CLOSE TO ENEMY SYSTEM. (i.e. MI Cdr alerts/confirm LLVI teams in vicinity, SOCCE alerts/confirm ODA teams in vicinity, ADA Cdr alerts/confirm Stinger teams in vicinity, etc.)	ALL
<b><u>STEP 5</u></b>	
7. CONFIRM ALL FRIENDLY UNITS IN A CLOCKWISE DIRECTION; IN TURN, THE STAFF ANNOUNCES IF ITS BOS ELEMENTS ARE CLEAR, UNKNOWN, OR DANGER CLOSE.	ALL
8. IF ALL CLEAR; ANNOUNCE ALL CLEAR TO TOC.	BATTLE CPT
9. IF NOT CLEAR, RECORD AND CONTINUE TO OBTAIN STATUS ON APPLICABLE ELEMENT(S); ANNOUNCE THE ELEMENT(S) NOT CLEAR OR DANGER CLOSE.	BATTLE CPT, APPLICABLE STAFF
<b><u>STEP 6A (ONLY IF CLEARED FOR FIRES, OTHERWISE GO TO STEP 6B)</u></b>	
10. REVIEW TARGETING BOARD; DETERMINE IF CONTACT WAS TARGETED. (i.e. the grid for the actual contact is close to a suspected grid on the targeting board)	BATTLE CPT

**STEP 7A (ONLY IF ANTICIPATED BY TARGETING, OTHERWISE GO TO STEP 7B)**

- |  |                                    |
|--|------------------------------------|
| 11. IF ANTICIPATED BY TARGETING, ANNOUNCE THE TARGET # _____ IN EFFECT; POINT TO THE ACTUAL TARGET ON THE TARGETING BOARD; INSTRUCT THE STAFF TO CONFIRM APPLICABLE SUBORDINATE ELEMENTS EXECUTING THE TARGET. | BATTLE CPT<br>APPLICABLE STAFF     |
| 12. ADVISE THE APPLICABLE MANEUVER BATTALION OR SUBORDINATE ELEMENTS THAT TARGET # _____ IS IN EFFECT; RECONFIRM THEIR ROLE IN EXECUTION.  | BATTLE CPT<br>APPLICABLE STAFF     |
| 13. FIRE COUNTERBATTERY OR EXECUTE THE TARGET IAW TARGETING BOARD AND LATEST FRAGO.<br>(GO TO STEP 8)  | BATTLE CPT/FSO<br>APPLICABLE STAFF |

**STEP 7B (ONLY IF NOT ANTICIPATED BY TARGETING)**

- |  |                |
|--|----------------|
| 14. IF NOT ANTICIPATED BY TARGETING, ANNOUNCE TO STAFF THAT TARGETING PROCEDURES ARE NOT IN EFFECT.              | BATTLE CPT     |
| 15. ALERT THE GUNS.  | FSO            |
| 16. RECONFIRM LOCATION OF BRIGADE/BOS ASSETS IN VICINITY OF THE ENEMY SYSTEM; DISCREPANCIES REPORT BY EXCEPTION. | ALL            |
| 17. NOTIFY SUBORDINATE BATTALION THAT BRIGADE IS CLEAR.  | BATTLE CPT/FSO |
| -OR-   |                |
| 18. IF OUT OF BRIGADE SECTOR, NOTIFY APPLICABLE UNIT AND REQUEST PERMISSION TO FIRE.                             | BATTLE CPT/FSO |
| 19. IF OUT OF SECTOR UNIT GIVES PERMISSION, THEN FIRE.   |                |
| 20. IF IN SECTOR, STANDBY AND OBTAIN SUBORDINATE UNIT'S SITREP/DECISION TO FIRE. (GO TO STEP 8)                  | BATTLE CPT/FSO |

**STEP 6B (ONLY IF NOT CLEARED FOR FIRES)**

- |   |            |
|---|------------|
| 21. REVIEW TARGETING BOARD; DETERMINE IF CONTACT WAS TARGETED. (i.e. the grid for the actual contact is close to a suspected grid on the targeting board) | BATTLE CPT |
|---|------------|

**STEP 7C**

- |   |            |
|---|------------|
| 22. ANNOUNCE TO STAFF WHETHER OR NOT CONTACT IS TARGETED. | BATTLE CPT |
|---|------------|

- |   |                                 |
|---|---------------------------------|
| 23. IN A CLOCKWISE DIRECTION, IN TURN THE STAFF ADVISES THE BATTLE CPT OF POTENTIAL SOLUTIONS TO CLEAR FIRES AND/OR BRIGADE ASSETS POTENTIALLY AVAILABLE. (i.e. Avn, Armor, Arty, MI, etc.)         | ALL                             |
| 24. ADVISE COMMANDER AND REPORT THE STAFF'S RECOMMENDATION; OBTAIN COMMANDER'S DECISION.  | BATTLE CPT                      |
| <br><b><u>STEP 8</u></b>  |                                 |
| 25. SEND NEW FRAGO IF COMMANDER DECIDES TO CHANGE CURRENT CONCEPT OF OPERATIONS.  | BATTLE CPT                      |
| 26. ALERT, COORDINATE, RECONFIRM ANY COMMITMENT OF BRIGADE CONTROLLED ASSETS. (Anticipate MEDEVAC, Maintenance Evacuation, Resupply, LZs, Routes, etc.)   | BATTLE CPT<br>APPLICABLE STAFF  |
| <br><b><u>STEP 9</u></b>  |                                 |
| 27. MONITOR AND BATTLETRACK THE FIGHT.  | ALL                             |
| <br><b><u>STEP 10</u></b>   |                                 |
| 28. NOTIFY HIGHER.  | BATTLE CPT/S2                   |
| <br><b><u>STEP 11</u></b>   |                                 |
| 29. OBTAIN BDA FROM UNIT IN CONTACT.  | BATTLE CPT                      |
| <br>-OR-  |                                 |
| 30. EXECUTE CONFIRMATION OF BDA FROM TARGETING BOARD AND FRAGO.   | BATTLE CPT                      |
| <br>-OR-  |                                 |
| 31. PROVIDE RECOMMENDATION TO COMMANDER ON METHOD FOR CONFIRMING BDA; OBTAIN COMMANDER'S DECISION AND EXECUTE.  | BATTLE CPT,<br>APPLICABLE STAFF |
| <br><b><u>STEP 12</u></b>   |                                 |
| 32. ANALYZE WHETHER CONTACT CONFIRMS ANY CCIR; NOTIFY COMMANDER.  | BATTLE CPT/S2                   |
| <br><b><u>STEP 13</u></b>   |                                 |
| 33. REVIEW PATTERN ANALYSIS; UPDATE SITMAP AND SITUATIONAL TEMPLATE; ADVISE COMMANDER ON ANTICIPATED ENEMY REACTION; NOTIFY SUBORDINATE UNITS AND, IF APPLICABLE, ADJACENT UNITS; UPDATE BDA CHART. | BATTLE CPT/S2                   |

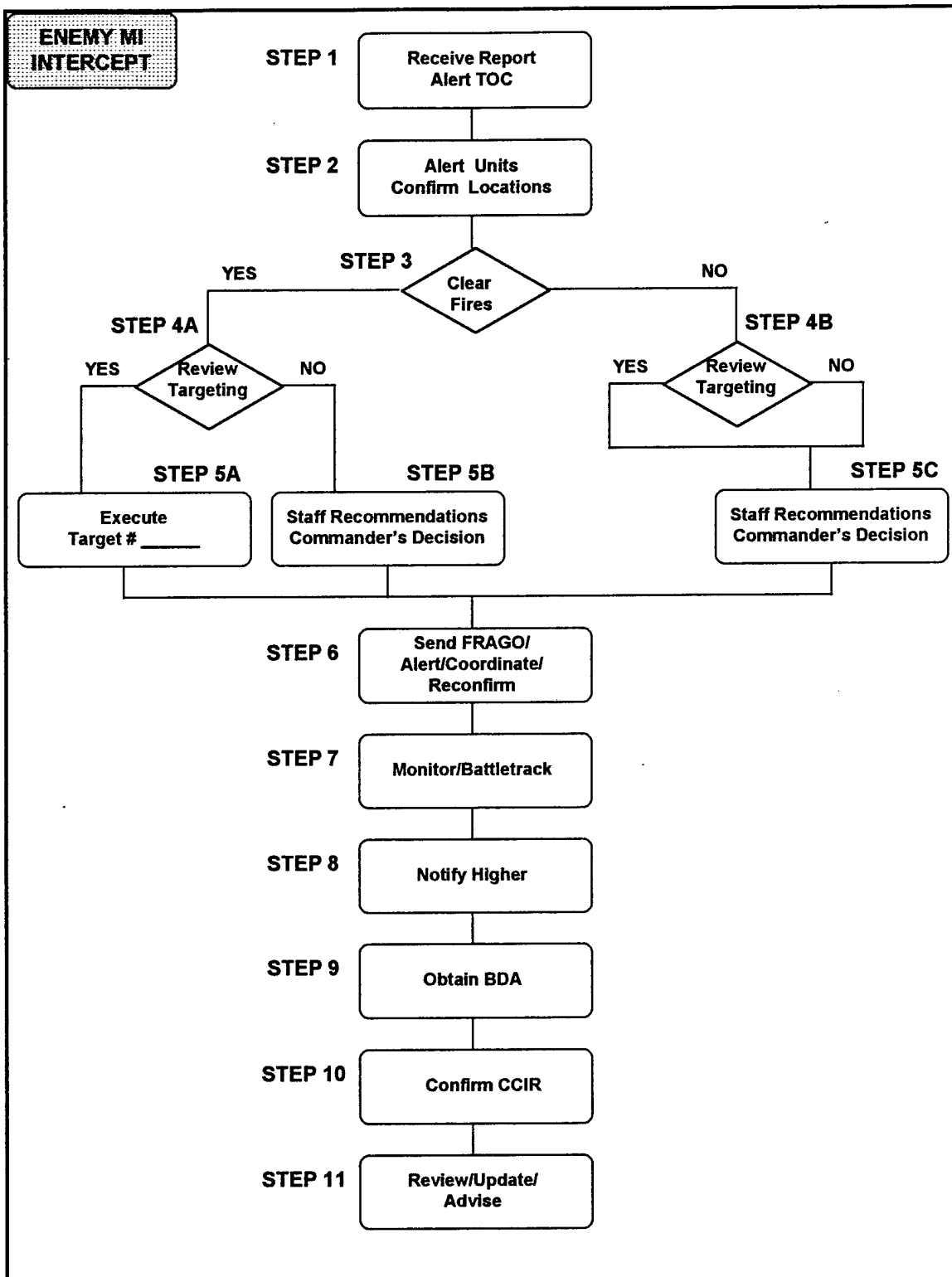


Fig. 19. Brigade Staff Battle Drill #3 - React to Enemy Military Intelligence Intercept.

BRIGADE STAFF BATTLE DRILL #3 - REACT TO ENEMY MILITARY INTELLIGENCE INTERCEPT

<u>ACTION</u>	<u>RESPONSIBILITY</u>
<b><u>STEP 1</u></b>	
1. RECEIVE REPORT FROM MI COMPANY. (Size/Activity/Grid/Time)	MI CDR/LNO
2. ALERT TOC; SAY AGAIN REPORT AND GIVE +/- ERROR OF PROBABILITY IF LOCATION DETERMINED FROM DF.	MI CDR/LNO
3. PLOT LOCATION.	ALL
<b><u>STEP 2</u></b>	
4. ALERT YOUR BOS ELEMENTS; CONFIRM ANY FRIENDLY LOCATIONS CLOSE TO CONTACT. (i.e. MI Cdr alerts/confirm LLVI teams in vicinity, SOCCE alerts/confirm ODA teams in vicinity, ADA Cdr alerts/confirm Stinger teams in vicinity, etc.)	ALL
<b><u>STEP 3</u></b>	
5. CONFIRM ALL FRIENDLY UNITS IN A CLOCKWISE DIRECTION; IN TURN, THE STAFF ANNOUNCES IF ITS BOS ELEMENTS ARE CLEAR, UNKNOWN, OR DANGER CLOSE.	ALL
6. IF ALL CLEAR; ANNOUNCE ALL CLEAR TO TOC.	BATTLE CPT
7. IF NOT CLEAR, RECORD AND CONTINUE TO OBTAIN STATUS ON APPLICABLE ELEMENT(S); ANNOUNCE THE ELEMENT(S) NOT CLEAR OR DANGER CLOSE.	BATTLE CPT, APPLICABLE STAFF
<b><u>STEP 4A (ONLY IF CLEARED FOR FIRES, OTHERWISE GO TO STEP 4B)</u></b>	
8. REVIEW TARGETING BOARD; DETERMINE IF ENEMY SYSTEM WAS TARGETED. (i.e. the grid for the actual detection is close to a suspected grid on the targeting board)	BATTLE CPT
<b><u>STEP 5A (ONLY IF ANTICIPATED BY TARGETING, OTHERWISE GO TO STEP 5B)</u></b>	
9. IF ANTICIPATED BY TARGETING, ANNOUNCE THE TARGET # _____ IN EFFECT; POINT TO THE ACTUAL TARGET ON THE TARGETING BOARD; INSTRUCT THE STAFF TO CONFIRM APPLICABLE SUBORDINATE ELEMENTS EXECUTING THE TARGET.	BATTLE CPT APPLICABLE STAFF
10. ADVISE THE APPLICABLE MANEUVER BATTALION OR SUBORDINATE ELEMENTS THAT TARGET # _____ IS IN EFFECT; RECONFIRM THEIR ROLE IN EXECUTION.	BATTLE CPT APPLICABLE STAFF

- |  |                                    |
|--|------------------------------------|
| 11. FIRE COUNTERBATTERY OR EXECUTE THE TARGET<br>IAW TARGETING BOARD AND LATEST FRAGO.<br>(GO TO STEP 6) | BATTLE CPT/FSO<br>APPLICABLE STAFF |
|--|------------------------------------|

**STEP 5B (ONLY IF NOT ANTICIPATED BY TARGETING)**

- |  |                |
|--|----------------|
| 12. IF NOT ANTICIPATED BY TARGETING, ANNOUNCE TO<br>STAFF THAT TARGETING PROCEDURES ARE NOT IN<br>EFFECT.              | BATTLE CPT     |
| 13. ALERT THE GUNS.  | FSO            |
| 14. RECONFIRM LOCATION OF BRIGADE/BOS ASSETS IN<br>VICINITY OF THE ENEMY SYSTEM; DISCREPANCIES<br>REPORT BY EXCEPTION. | ALL            |
| 15. NOTIFY SUBORDINATE BATTALION THAT BRIGADE IS<br>CLEAR.   | BATTLE CPT/FSO |

-OR-

- |  |                |
|--|----------------|
| 16. IF OUT OF BRIGADE SECTOR, NOTIFY APPLICABLE<br>UNIT AND REQUEST PERMISSION TO FIRE.            | BATTLE CPT/FSO |
| 17. IF OUT OF SECTOR UNIT GIVES PERMISSION, THEN<br>FIRE.  |                |
| 18. IF IN SECTOR, STANDBY AND OBTAIN SUBORDINATE<br>UNIT'S SITREP/DECISION TO FIRE. (GO TO STEP 6) | BATTLE CPT/FSO |

**STEP 4B (ONLY IF NOT CLEARED FOR FIRES)**

- |   |            |
|---|------------|
| 19. REVIEW TARGETING BOARD; DETERMINE IF ENEMY<br>SYSTEM WAS TARGETED. (i.e. the grid for the<br>actual detection is close to a suspected<br>grid on the targeting board) | BATTLE CPT |
|---|------------|

**STEP 5C**

- |   |            |
|---|------------|
| 20. ANNOUNCE TO STAFF WHETHER OR NOT CONTACT IS<br>TARGETED.  | BATTLE CPT |
| 21. IN A CLOCKWISE DIRECTION, IN TURN THE STAFF<br>ADVISES THE BATTLE CPT OF POTENTIAL SOLUTIONS<br>TO CLEAR FIRES AND/OR BRIGADE ASSETS<br>POTENTIALLY AVAILABLE. (i.e. Avn, Armor,<br>Arty, MI, etc.) | ALL        |
| 22. ADVISE COMMANDER AND REPORT THE STAFF'S<br>RECOMMENDATION; OBTAIN COMMANDER'S DECISION.   | BATTLE CPT |

**STEP 6**

- |   |            |
|---|------------|
| 23. SEND NEW FRAGO IF COMMANDER DECIDES TO CHANGE<br>CURRENT CONCEPT OF OPERATIONS. | BATTLE CPT |
|---|------------|

24. ALERT, COORDINATE, RECONFIRM ANY COMMITMENT OF BRIGADE CONTROLLED ASSETS. (Anticipate MEDEVAC, Maintenance Evacuation, Resupply, LZs, Routes, etc.)

BATTLE CPT  
APPLICABLE STAFF

**STEP 7**

25. MONITOR AND BATTLETRACK THE FIGHT.

ALL

**STEP 8**

26. NOTIFY HIGHER.

BATTLE CPT/S2

**STEP 9**

27. OBTAIN BDA FROM UNIT IN CONTACT.

BATTLE CPT

-OR-

28. EXECUTE CONFIRMATION OF BDA FROM TARGETING BOARD AND FRAGO.

BATTLE CPT

-OR-

29. PROVIDE RECOMMENDATION TO COMMANDER ON METHOD FOR CONFIRMING BDA; OBTAIN COMMANDER'S DECISION AND EXECUTE.

BATTLE CPT,  
APPLICABLE STAFF

**STEP 10**

30. ANALYZE WHETHER CONTACT CONFIRMS ANY CCIR; NOTIFY COMMANDER.

BATTLE CPT/S2

**STEP 11**

31. REVIEW PATTERN ANALYSIS; UPDATE SITMAP AND SITUATIONAL TEMPLATE; ADVISE COMMANDER ON ANTICIPATED ENEMY REACTION; NOTIFY SUBORDINATE UNITS AND, IF APPLICABLE, ADJACENT UNITS; UPDATE BDA CHART.

BATTLE CPT/S2

32. UPDATE TECH DATA; UPDATE SIGINT SITMAP

MI CDR/LNO

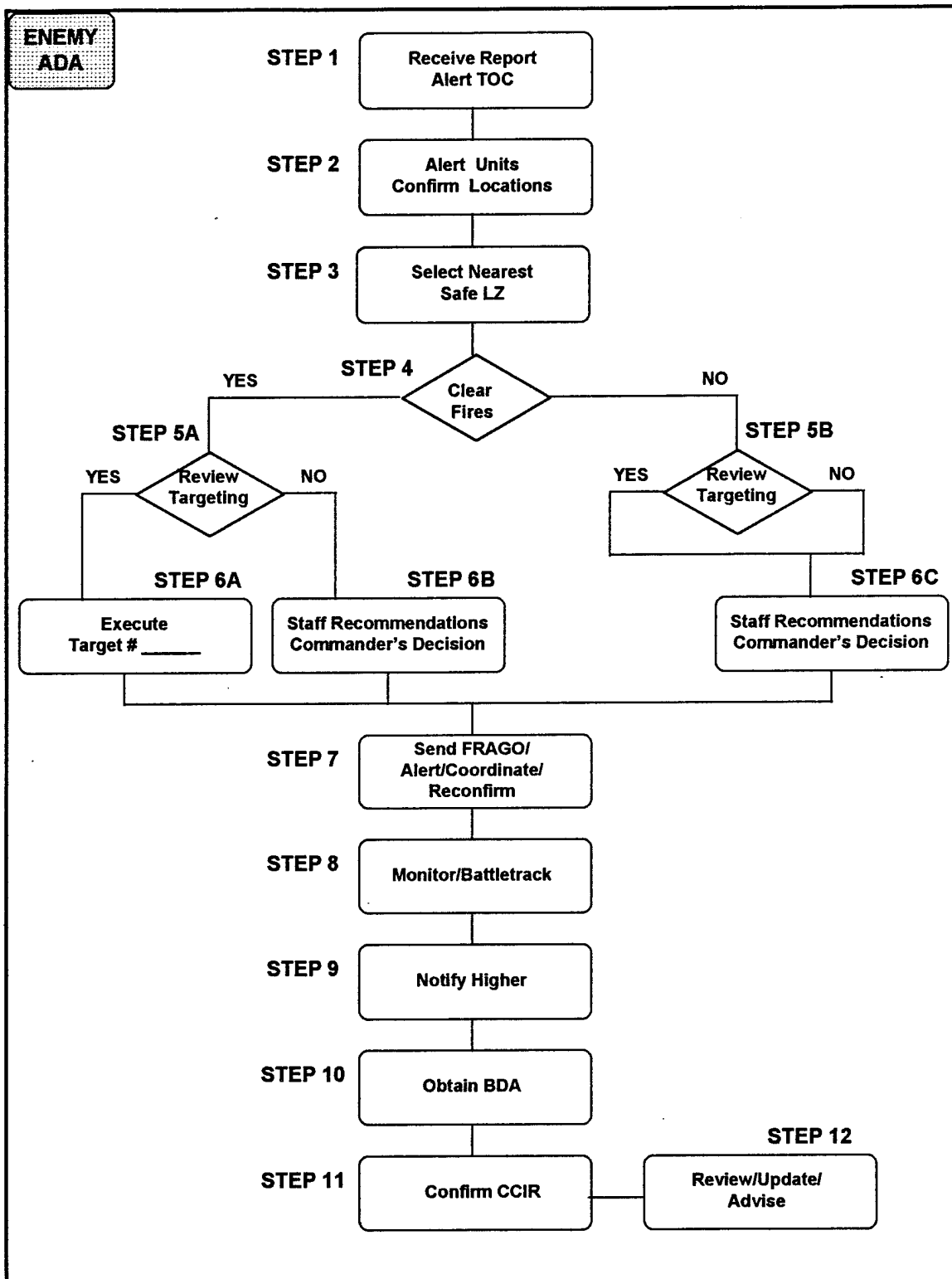


Fig. 20. Brigade Staff Battle Drill #4 - React to Enemy Air Defense.

BRIGADE STAFF BATTLE DRILL #4 - REACT TO ENEMY AIR DEFENSE

<u>ACTION</u>	<u>RESPONSIBILITY</u>
<b><u>STEP 1</u></b>	
1. RECEIVE REPORT. (Size/Activity/Grid/Time)	ALL
2. ALERT TOC; SAY AGAIN REPORT AND CALLSIGN OF SENDER.	PERSON RECEIVING REPORT
3. PLOT LOCATION.	ALL
<b><u>STEP 2</u></b>	
4. ALERT YOUR BOS ELEMENTS; CONFIRM ANY FRIENDLY LOCATIONS CLOSE TO CONTACT. (i.e. MI Cdr alerts/confirm LLVI teams in vicinity, SOCCE alerts/confirm ODA teams in vicinity, ADA Cdr alerts/confirm Stinger teams in vicinity, etc.)	ALL
<b><u>STEP 3</u></b>	
5. DETERMINE LOCATION OF NEAREST LZ NOT LINE OF SITE (LOS) WITH ENEMY SYSTEM.	AVN LNO
<b><u>STEP 4</u></b>	
6. CONFIRM ALL FRIENDLY UNITS IN A CLOCKWISE DIRECTION; IN TURN, THE STAFF ANNOUNCES IF ITS BOS ELEMENTS ARE CLEAR, UNKNOWN, OR DANGER CLOSE.	ALL
7. IF ALL CLEAR; ANNOUNCE ALL CLEAR TO TOC.	BATTLE CPT
8. IF NOT CLEAR, RECORD AND CONTINUE TO OBTAIN STATUS ON APPLICABLE ELEMENT(S); ANNOUNCE THE ELEMENT(S) NOT CLEAR OR DANGER CLOSE.	BATTLE CPT, APPLICABLE STAFF
<b><u>STEP 5A (ONLY IF CLEARED FOR FIRES, OTHERWISE GO TO STEP 5B)</u></b>	
9. REVIEW TARGETING BOARD; DETERMINE IF ENEMY ADA WAS TARGETED. (i.e. the grid for the actual contact is close to a suspected grid on the targeting board)	BATTLE CPT
<b><u>STEP 6A (ONLY IF ANTICIPATED BY TARGETING, OTHERWISE GO TO STEP 6B)</u></b>	
10. IF ANTICIPATED BY TARGETING, ANNOUNCE THE TARGET #_____ IN EFFECT; POINT TO THE ACTUAL TARGET ON THE TARGETING BOARD; INSTRUCT THE STAFF TO CONFIRM APPLICABLE SUBORDINATE ELEMENTS EXECUTING THE TARGET.	BATTLE CPT APPLICABLE STAFF

11. ADVISE THE APPLICABLE MANEUVER BATTALION OR SUBORDINATE ELEMENTS THAT TARGET #\_\_\_\_\_ IS IN EFFECT; RECONFIRM THEIR ROLE IN EXECUTION. BATTLE CPT  
APPLICABLE STAFF

12. EXECUTE THE TARGET IAW TARGETING BOARD AND LATEST FRAGO. (i.e. Launch air assault strike teams, clarify their hasty sector and control measures.) (GO TO STEP 7) BATTLE CPT

**STEP 6B (ONLY IF NOT ANTICIPATED BY TARGETING)**

13. IF NOT ANTICIPATED BY TARGETING, ANNOUNCE TO STAFF THAT TARGETING PROCEDURES ARE NOT IN EFFECT. BATTLE CPT

14. IN A CLOCKWISE DIRECTION, IN TURN THE STAFF ADVISES THE BATTLE CPT OF BRIGADE ASSETS POTENTIALLY AVAILABLE. (i.e. Avn, Armor, Arty, MI, etc.) ALL

15. ADVISE COMMANDER AND REPORT THE STAFF'S RECOMMENDATION OF ASSETS AVAILABLE; OBTAIN COMMANDER'S DECISION. (GO TO STEP 7) BATTLE CPT

**STEP 5B (ONLY IF NOT CLEARED FOR FIRES)**

16. REVIEW TARGETING BOARD; DETERMINE IF ENEMY ADA WAS TARGETED. (i.e. the grid for the actual contact is close to a suspected grid on the targeting board) BATTLE CPT

**STEP 6C**

17. ANNOUNCE TO STAFF WHETHER OR NOT ENEMY ADA IS TARGETED. BATTLE CPT

18. IN A CLOCKWISE DIRECTION, IN TURN THE STAFF ADVISES THE BATTLE CPT OF POTENTIAL SOLUTIONS TO CLEAR FIRES AND/OR BRIGADE ASSETS POTENTIALLY AVAILABLE. (i.e. Avn, Armor, Arty, MI, etc.) ALL

19. ADVISE COMMANDER AND REPORT THE STAFF'S RECOMMENDATION; OBTAIN COMMANDER'S DECISION. BATTLE CPT

**STEP 7**

20. SEND NEW FRAGO IF COMMANDER DECIDES TO CHANGE CURRENT CONCEPT OF OPERATIONS. BATTLE CPT

21. ALERT, COORDINATE, RECONFIRM ANY COMMITMENT OF BRIGADE CONTROLLED ASSETS; TO INCLUDE COORDINATION OF POTENTIAL PRIMARY LZ AND STRIKE TEAM CONTROL MEASURES WITH SUBORDINATE BATTALION IF APPLICABLE. (Anticipate MEDEVAC, Maintenance Evacuation, Resupply, LZs, Routes, etc.) BATTLE CPT  
APPLICABLE STAFF

**STEP 8**

22. MONITOR AND BATTLETRACK THE FIGHT.

ALL

**STEP 9**

23. NOTIFY HIGHER.

BATTLE CPT/S2

**STEP 10**

24. OBTAIN BDA FROM UNIT IN CONTACT.

BATTLE CPT

-OR-

25. EXECUTE CONFIRMATION OF BDA FROM TARGETING  
BOARD AND FRAGO.

BATTLE CPT

-OR-

26. PROVIDE RECOMMENDATION TO COMMANDER ON METHOD  
FOR CONFIRMING BDA; OBTAIN COMMANDER'S  
DECISION AND EXECUTE.

BATTLE CPT,  
APPLICABLE STAFF

**STEP 11**

27. ANALYZE WHETHER CONTACT CONFIRMS ANY CCIR;  
NOTIFY COMMANDER.

BATTLE CPT/S2

**STEP 12**

28. REVIEW PATTERN ANALYSIS; UPDATE SITMAP AND  
SITUATIONAL TEMPLATE; ADVISE COMMANDER ON  
ANTICIPATED ENEMY REACTION; NOTIFY SUBORDINATE  
UNITS AND, IF APPLICABLE, ADJACENT UNITS;  
UPDATE BDA CHART.

BATTLE CPT/S2

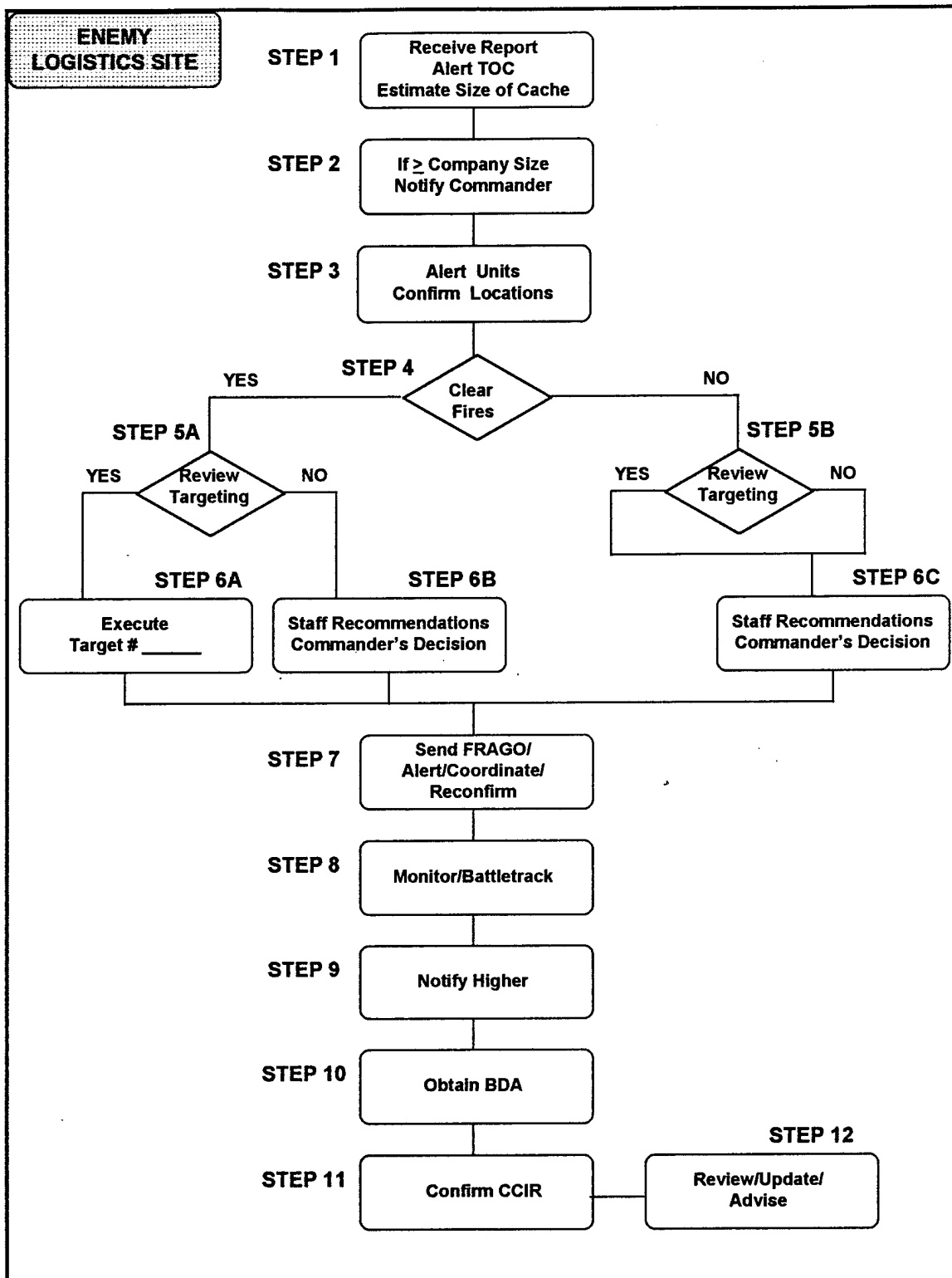


Fig. A-5. Brigade Staff Battle Drill #5 - React to Enemy Logistics Site.

BRIGADE STAFF BATTLE DRILL #5 - REACT TO ENEMY LOGISTICS SITE

<u>ACTION</u>	<u>RESPONSIBILITY</u>
<b><u>STEP 1</u></b>	
1. RECEIVE REPORT. (Size/Activity/Grid/Time)	ALL
2. ALERT TOC; SAY AGAIN REPORT AND CALLSIGN OF SENDER.	PERSON RECEIVING REPORT
3. PLOT LOCATION.	ALL
<b><u>STEP 2</u></b>	
4. IF INDICATORS FOR LOGISTICS SITE ARE COMPANY SIZE OR LARGER, IMMEDIATELY NOTIFY COMMANDER; IF NOT, DECIDE WHETHER TO CONTINUE BATTLE DRILL; ANNOUNCE DECISION TO STAFF.	BATTLE CPT
<b><u>STEP 3</u></b>	
5. ALERT YOUR BOS ELEMENTS; CONFIRM ANY FRIENDLY LOCATIONS CLOSE TO SITE. (i.e. MI Cdr alerts/confirm LLVI teams in vicinity, SOCCE alerts/confirm ODA teams in vicinity, ADA Cdr alerts/confirm Stinger teams in vicinity, etc.)	ALL
<b><u>STEP 4</u></b>	
6. CONFIRM ALL FRIENDLY UNITS IN A CLOCKWISE DIRECTION; IN TURN, THE STAFF ANNOUNCES IF ITS BOS ELEMENTS ARE CLEAR, UNKNOWN, OR DANGER CLOSE.	ALL
7. IF ALL CLEAR; ANNOUNCE ALL CLEAR TO TOC.	BATTLE CPT
8. IF <u>NOT</u> CLEAR, RECORD AND CONTINUE TO OBTAIN STATUS ON APPLICABLE ELEMENT(S); ANNOUNCE THE ELEMENT(S) NOT CLEAR OR DANGER CLOSE.	BATTLE CPT, APPLICABLE STAFF
<b><u>STEP 5A (ONLY IF CLEARED FOR FIRES, OTHERWISE GO TO STEP 5B)</u></b>	
9. REVIEW TARGETING BOARD; DETERMINE IF SITE WAS TARGETED. (i.e. the grid for the actual contact is close to a suspected grid on the targeting board)	BATTLE CPT
<b><u>STEP 6A (ONLY IF ANTICIPATED BY TARGETING, OTHERWISE GO TO STEP 6B)</u></b>	
10. IF ANTICIPATED BY TARGETING, ANNOUNCE THE TARGET #_____ IN EFFECT; POINT TO THE ACTUAL TARGET ON THE TARGETING BOARD; INSTRUCT THE STAFF TO CONFIRM APPLICABLE SUBORDINATE ELEMENTS EXECUTING THE TARGET.	BATTLE CPT APPLICABLE STAFF

11. ADVISE THE APPLICABLE MANEUVER BATTALION OR SUBORDINATE ELEMENTS THAT TARGET # \_\_\_\_\_ IS IN EFFECT; RECONFIRM THEIR ROLE IN EXECUTION. BATTLE CPT  
APPLICABLE STAFF

12. EXECUTE THE TARGET IAW TARGETING BOARD AND LATEST FRAGO. (GO TO STEP 7) BATTLE CPT

**STEP 6B (ONLY IF NOT ANTICIPATED BY TARGETING)**

13. IF NOT ANTICIPATED BY TARGETING, ANNOUNCE TO STAFF THAT TARGETING PROCEDURES ARE NOT IN EFFECT. BATTLE CPT

14. IN A CLOCKWISE DIRECTION, IN TURN THE STAFF ADVISES THE BATTLE CPT OF BRIGADE ASSETS POTENTIALLY AVAILABLE. (i.e. Avn, Armor, Arty, MI, etc.) ALL

15. ADVISE COMMANDER AND REPORT THE STAFF'S RECOMMENDATION OF ASSETS AVAILABLE; OBTAIN COMMANDER'S DECISION. (GO TO STEP 7) BATTLE CPT

**STEP 5B (ONLY IF NOT CLEARED FOR FIRES)**

16. REVIEW TARGETING BOARD; DETERMINE IF SITE WAS TARGETED. (i.e. the grid for the actual contact is close to a suspected grid on the targeting board) BATTLE CPT

**STEP 6C**

17. ANNOUNCE TO STAFF WHETHER OR NOT SITE IS TARGETED. BATTLE CPT

18. IN A CLOCKWISE DIRECTION, IN TURN THE STAFF ADVISES THE BATTLE CPT OF POTENTIAL SOLUTIONS TO CLEAR FIRES AND/OR BRIGADE ASSETS POTENTIALLY AVAILABLE. (i.e. Avn, Armor, Arty, MI, etc.) ALL

19. ADVISE COMMANDER AND REPORT THE STAFF'S RECOMMENDATION; OBTAIN COMMANDER'S DECISION. BATTLE CPT

**STEP 7**

20. SEND NEW FRAGO IF COMMANDER DECIDES TO CHANGE CURRENT CONCEPT OF OPERATIONS. BATTLE CPT

21. ALERT, COORDINATE, RECONFIRM AND COMMITMENT OF BRIGADE CONTROLLED ASSETS. (Anticipate MEDEVAC, Maintenance Evacuation, Resupply, LZs, Routes, etc.) BATTLE CPT  
APPLICABLE STAFF

**STEP 8**

22. MONITOR AND BATTLETRACK THE FIGHT. ALL

**STEP 9**

23. NOTIFY HIGHER.

BATTLE CPT/S2

**STEP 10**

24. OBTAIN BDA FROM UNIT IN CONTACT.

BATTLE CPT

-OR-

25. EXECUTE CONFIRMATION OF BDA FROM TARGETING  
BOARD AND FRAGO.

BATTLE CPT

-OR-

26. PROVIDE RECOMMENDATION TO COMMANDER ON METHOD  
FOR CONFIRMING BDA; OBTAIN COMMANDER'S  
DECISION AND EXECUTE.

BATTLE CPT,  
APPLICABLE STAFF

**STEP 11**

27. ANALYZE WHETHER CONTACT CONFIRMS ANY CCIR;  
NOTIFY COMMANDER.

BATTLE CPT/S2

**STEP 12**

28. REVIEW PATTERN ANALYSIS; UPDATE SITMAP AND  
SITUATIONAL TEMPLATE; ADVISE COMMANDER ON  
ANTICIPATED ENEMY REACTION; NOTIFY SUBORDINATE  
UNITS AND, IF APPLICABLE, ADJACENT UNITS;  
UPDATE BDA CHART.

BATTLE CPT/S2

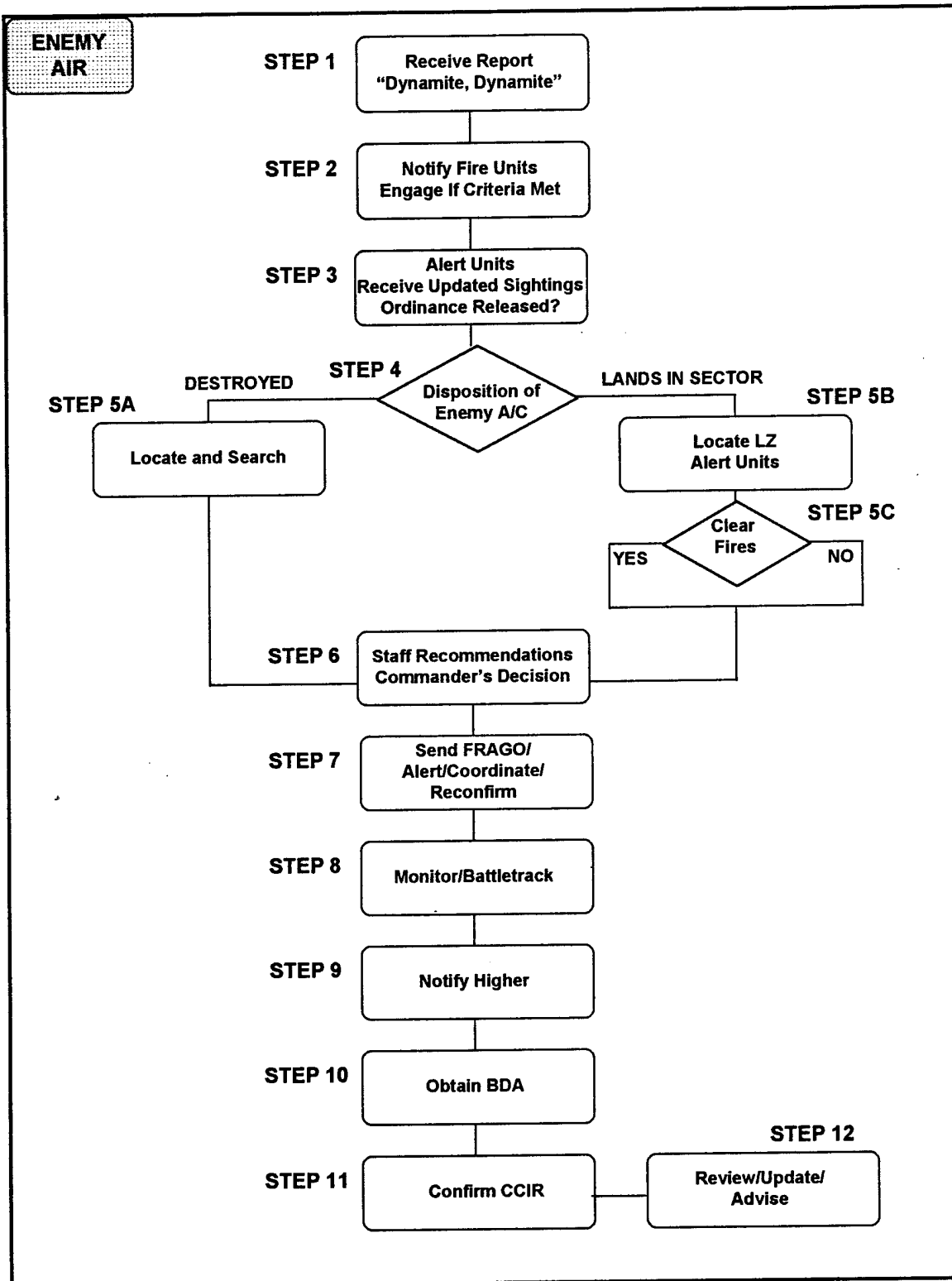


Fig. 22. Brigade Staff Battle Drill #6 - React to Enemy Air.

BRIGADE STAFF BATTLE DRILL #6 - REACT TO ENEMY AIR THREAT

ACTION

RESPONSIBILITY

STEP 1

- |   |                            |
|---|----------------------------|
| 1. RECEIVE REPORT FROM DEW NET OR PHYSICAL SIGHTING. (Type A/C, Location, Heading, Possible Air Assault?) | ADAO<br>APPLICABLE STAFF   |
| 2. ALERT TOC; "DYNAMITE, DYNAMITE"; SAY AGAIN REPORT AND CALLSIGN OF SENDER.                              | PERSON RECEIVING<br>REPORT |
| 3. PLOT APPROXIMATE LOCATION AND HEADING.   | ADAO                       |

STEP 2

- |   |      |
|---|------|
| 4. NOTIFY FIRE UNITS; RECONFIRM ENGAGEMENT CRITERIA; ENGAGE IF CRITERIA IS MET. | ADAO |
|---|------|

STEP 3

- |   |                                |
|---|--------------------------------|
| 5. ALERT SUBORDINATE MANEUVER/BOS ELEMENTS WITH "DYNAMITE, DYNAMITE."   | ALL                            |
| 6. OBTAIN ANY ADDITIONAL SIGHTINGS FROM SUBORDINATE ELEMENTS AND ANNOUNCE ALOUD TO THE STAFF.   | PERSON(S)<br>RECEIVING REPORT  |
| 7. CONTINUE TO SEND UPDATED LOCATIONS/HEADINGS AND ORDINANCE RELEASED, IF ANY, TO ALL SUBORDINATE ELEMENTS UNTIL ENEMY AIR IS DESTROYED OR OUT OF SECTOR. | BATTLE CPT<br>APPLICABLE STAFF |

STEP 4

- |  |                 |
|--|-----------------|
| 8. CONFIRM WHETHER ENEMY AIRCRAFT IS DESTROYED OR LANDS IN SECTOR. | BATTLE CPT/ADAO |
|--|-----------------|

STEP 5A (ONLY IF AIRCRAFT IS DESTROYED, OTHERWISE GO TO STEP 5B)

- |  |                          |
|--|--------------------------|
| 9. RECEIVE REPORT FROM FIRE UNIT OR MANEUVER UNIT THAT DESTROYS AIRCRAFT, OBTAIN ESTIMATED LOCATION AND ANNOUNCE TO STAFF.   | ADAO<br>APPLICABLE STAFF |
| 10. DETERMINE CLOSEST FRIENDLY UNIT ABLE TO INVESTIGATE AND SEARCH.  | BATTLE CPT               |
| 11. IF FRIENDLY UNIT IS CLOSE ENOUGH TO DESTROYED AIRCRAFT TO INVESTIGATE WITHOUT EFFECTING THE UNIT'S CURRENT OPERATIONS, DIRECT SUBORDINATE UNIT TO INVESTIGATE, SEARCH AND REPORT; ANNOUNCE TO STAFF. | BATTLE CPT               |

12. IF NO FRIENDLY UNIT IS CLOSE ENOUGH OR IF INVESTIGATION EFFECTS CURRENT OPERATIONS, ANNOUNCE TO STAFF THE LOCATION OF THE DOWNED ENEMY AIRCRAFT AND REQUEST POTENTIAL SOLUTIONS ON HOW TO OBTAIN BDA. (GO TO STEP 6)

BATTLE CPT

**STEP 5B (ONLY IF ENEMY AIRCRAFT LANDS IN SECTOR)**

13. OBTAIN REPORT OF ENEMY AIRCRAFT'S ESTIMATED LZ; DETERMINE IF THE ENEMY OFFLOADS SUPPLIES OR TROOPS; ANNOUNCE TO STAFF.
14. ALERT YOUR BOS ELEMENTS; CONFIRM ANY FRIENDLY LOCATIONS CLOSE TO THE SUSPECTED LZ. (i.e. Battle Cpt alerts/confirm subordinate maneuver elements, MI Cdr alerts/confirm LLVI teams, SOCCE alerts/confirm ODA teams, ADA alerts/confirm Stinger teams, etc.)

PERSON(S)  
RECEIVING REPORT

ALL

**STEP 5C**

6. CONFIRM ALL FRIENDLY UNITS IN A CLOCKWISE DIRECTION; IN TURN, THE STAFF ANNOUNCES IF ITS BOS ELEMENTS ARE CLEAR, UNKNOWN, OR DANGER CLOSE.
7. IF ALL CLEAR; ANNOUNCE ALL CLEAR TO TOC.
8. IF NOT CLEAR, RECORD AND CONTINUE TO OBTAIN STATUS ON APPLICABLE ELEMENT(S); ANNOUNCE THE ELEMENT(S) NOT CLEAR OR DANGER CLOSE.

ALL

BATTLE CPT

BATTLE CPT,  
APPLICABLE STAFF

**STEP 6**

9. IN A CLOCKWISE DIRECTION, IN TURN THE STAFF ADVISES THE BATTLE CPT OF POTENTIAL SOLUTIONS TO CLEAR FIRES AND/OR BRIGADE ASSETS POTENTIALLY AVAILABLE. (i.e. Avn, Armor, Arty, MI, etc.)
10. ADVISE COMMANDER AND REPORT THE STAFF'S RECOMMENDATION; OBTAIN COMMANDER'S DECISION.

ALL

BATTLE CPT

**STEP 7**

11. SEND NEW FRAGO IF COMMANDER DECIDES TO CHANGE CURRENT CONCEPT OF OPERATIONS.
12. ALERT, COORDINATE, RECONFIRM ANY COMMITMENT OF BRIGADE CONTROLLED ASSETS. (Anticipate MEDEVAC, Maintenance Evacuation, Resupply, LZs, Routes, etc.)

BATTLE CPT

BATTLE CPT  
APPLICABLE STAFF

**STEP 8**

13. MONITOR AND BATTLETRACK THE FIGHT.

ALL

**STEP 9**

14. NOTIFY HIGHER.

BATTLE CPT/S2

**STEP 10**

15. OBTAIN BDA FROM UNIT IN CONTACT.

BATTLE CPT

-OR-

16. PROVIDE RECOMMENDATION TO COMMANDER ON METHOD  
FOR CONFIRMING BDA; OBTAIN COMMANDER'S  
DECISION AND EXECUTE.

BATTLE CPT,  
APPLICABLE STAFF

**STEP 11**

17. ANALYZE WHETHER CONTACT CONFIRMS ANY CCIR;  
NOTIFY COMMANDER.

BATTLE CPT/S2

**STEP 12**

18. REVIEW PATTERN ANALYSIS; UPDATE SITMAP AND  
SITUATIONAL TEMPLATE; ADVISE COMMANDER ON  
ANTICIPATED ENEMY REACTION; NOTIFY SUBORDINATE  
UNITS AND, IF APPLICABLE, ADJACENT UNITS;  
UPDATE BDA CHART.

BATTLE CPT/S2

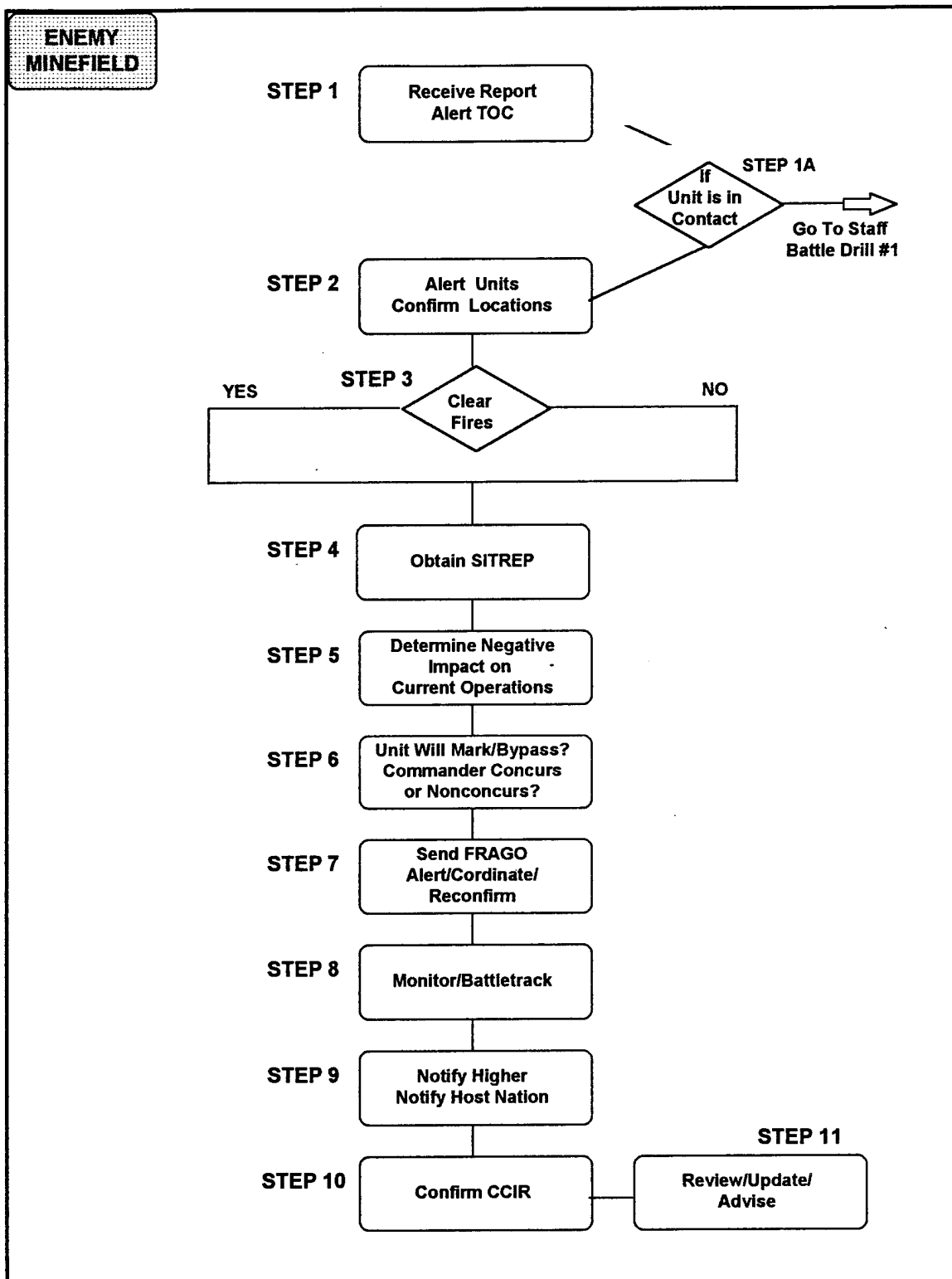


Fig. 23. Brigade Staff Battle Drill #7 - React to Enemy Minefield.

BRIGADE STAFF BATTLE DRILL #7 - REACT TO ENEMY MINEFIELD

<u>ACTION</u>	<u>RESPONSIBILITY</u>
<b><u>STEP 1</u></b>	
1. RECEIVE REPORT. (How discovered/size/type mines/grid/time)	ALL
2. ALERT TOC; SAY AGAIN REPORT AND CALLSIGN OF SENDER.	PERSON RECEIVING REPORT
3. PLOT LOCATION.	ALL
<b><u>STEP 1A</u></b>	
4. IF UNIT DISCOVERING MINEFIELD IS IN CONTACT (GO TO STAFF BATTLE DRILL #1 [REACT TO ENEMY CONTACT])	BATTLE CPT
<b><u>STEP 2</u></b>	
5. ALERT YOUR BOS ELEMENTS; CONFIRM ANY FRIENDLY LOCATIONS CLOSE TO MINEFIELD. (i.e. MI Cdr alerts/confirm LLVI teams in vicinity, SOCCE alerts/confirm ODA teams in vicinity, ADA Cdr alerts/confirm Stinger teams in vicinity, etc.)	ALL
<b><u>STEP 3 (IN CASE UNIT BECOMES ENGAGED)</u></b>	
6. CONFIRM ALL FRIENDLY UNITS IN A CLOCKWISE DIRECTION; IN TURN, THE STAFF ANNOUNCES IF ITS BOS ELEMENTS ARE CLEAR, UNKNOWN, OR DANGER CLOSE.	ALL
7. IF ALL CLEAR; ANNOUNCE ALL CLEAR TO TOC.	BATTLE CPT
8. IF NOT CLEAR, RECORD AND CONTINUE TO OBTAIN STATUS ON APPLICABLE ELEMENT(S); ANNOUNCE THE ELEMENT(S) NOT CLEAR OR DANGER CLOSE.	BATTLE CPT, APPLICABLE STAFF
<b><u>STEP 4</u></b>	
9. OBTAIN SITREP FROM UNIT DISCOVERING MINEFIELD; DETERMINE STATUS OF CASUALTIES, DAMAGED VEHICLES, NEED FOR MEDEVAC, MAINTENANCE EVACUATION, ETC.; ANNOUNCE TO STAFF.	BATTLE CPT
<b><u>STEP 5</u></b>	
10. DETERMINE IF REPORTED MINEFIELD WILL NEGATIVELY IMPACT CURRENT/FUTURE OPERATIONS.	ALL

- |   |     |
|---|-----|
| 11. IN A CLOCKWISE DIRECTION, IN TURN ADVISE BATTLE CPT OF POTENTIAL NEGATIVE IMPACT(S) ON CURRENT/FUTURE OPERATIONS. | ALL |
|---|-----|
- STEP 6**
- |   |            |
|---|------------|
| 12. DETERMINE IF SUBORDINATE MANEUVER BATTALION WILL MARK AND BYPASS, OR MARK AND CLEAR.  | BATTLE CPT |
| 13. ADVISE COMMANDER OF ANY POTENTIAL IMPACTS ON CURRENT/FUTURE OPERATIONS, AND SUBORDINATE MANEUVER BATTALION'S INTENT TO CLEAR OR BYPASS. | BATTLE CPT |
| 14. DETERMINE IF COMMANDER CONCURS/NONCONCURS WITH SUBORDINATE MANEUVER BATTALION'S DECISION; ANNOUNCE TO STAFF.                            | BATTLE CPT |
- STEP 7**
- |   |                                |
|---|--------------------------------|
| 15. SEND NEW FRAGO IF COMMANDER DECIDES TO CHANGE CURRENT CONCEPT OF OPERATIONS.  | BATTLE CPT                     |
| 16. ALERT, COORDINATE, RECONFIRM AND COMMITMENT OF BRIGADE CONTROLLED ASSETS. (Anticipate MEDEVAC, Maintenance Evacuation, Resupply, LZs, Routes, etc.) | BATTLE CPT<br>APPLICABLE STAFF |
- STEP 8**
- |  |     |
|--|-----|
| 17. MONITOR AND BATTLETRACK THE OPERATION. | ALL |
|--|-----|
- STEP 9**
- |  |                  |
|--|------------------|
| 18. NOTIFY HIGHER; AND/OR LOCAL HOST NATION AUTHORITIES IF APPLICABLE. | BATTLE CPT/S2/S5 |
|--|------------------|
- STEP 10**
- |  |               |
|--|---------------|
| 19. ANALYZE WHETHER CONTACT CONFIRMS ANY CCIR; NOTIFY COMMANDER. | BATTLE CPT/S2 |
|--|---------------|
- STEP 11**
- |  |                                   |
|--|-----------------------------------|
| 20. REVIEW PATTERN ANALYSIS, CURRENT OPERATIONS MAP, ENGINEER MAP, CIVIL AFFAIRS MAP; UPDATE SITMAP AND SITUATIONAL TEMPLATE; ADVISE COMMANDER ON ANTICIPATED ENEMY REACTION; NOTIFY SUBORDINATE UNITS AND, IF APPLICABLE, ADJACENT UNITS; REVIEW ASSETS AVAILABLE TO MONITOR AND DETECT/PREVENT ENEMY EFFORTS TO "RE-SEED"; UPDATE BDA CHART. | BATTLE CPT/S2<br>APPLICABLE STAFF |
|--|-----------------------------------|

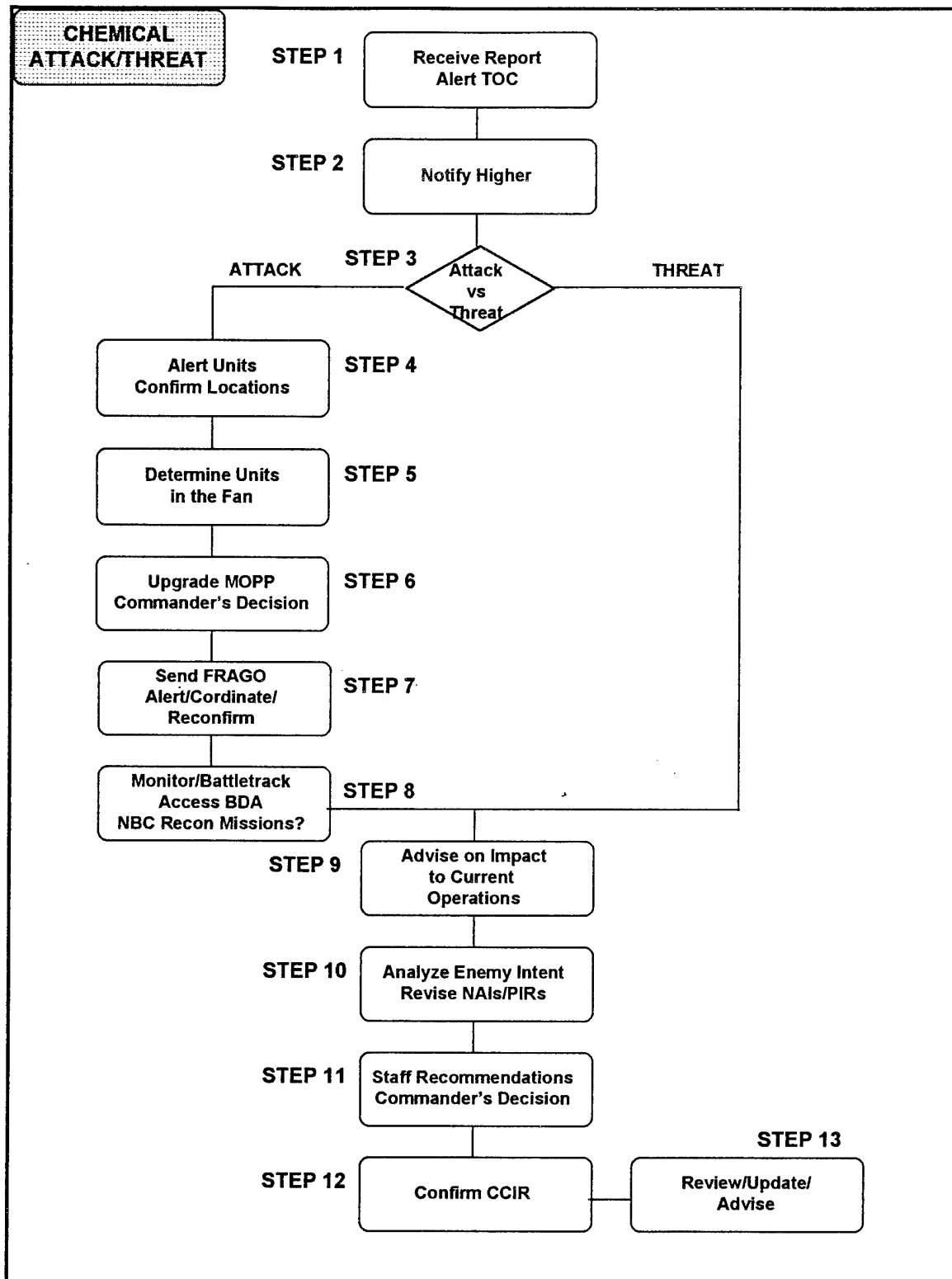


Fig. 24. Brigade Staff Battle Drill #8 - React to Chemical Attack/Threat.

# BRIGADE STAFF BATTLE DRILL #8 - REACT TO CHEMICAL ATTACK/THREAT

<u>ACTION</u>	<u>RESPONSIBILITY</u>
<b><u>STEP 1</u></b>	
1. RECEIVE NBC 1 REPORT OR CHEMICAL THREAT INDICATORS.	ALL
2. ALERT TOC; SAY AGAIN REPORT AND CALLSIGN OF SENDER.	PERSON RECEIVING REPORT
3. IF NBC 1, PLOT DOWNWIND FAN.	CHEMO
<b><u>STEP 2</u></b>	
4. IMMEDIATELY NOTIFY HIGHER.	BATTLE CPT
<b><u>STEP 3</u></b>	
5. IF REPORT IS ONLY A THREAT (GO TO STEP 9).	BATTLE CPT/CHEMO
<b><u>STEP 4</u></b>	
6. ALERT YOUR BOS ELEMENTS; CONFIRM ANY FRIENDLY LOCATIONS CLOSE TO DOWNWIND FAN. (i.e. MI Cdr alerts/confirm LLVI teams in vicinity, SOCCE alerts/confirm ODA teams in vicinity, ADA Cdr alerts/confirm Stinger teams in vicinity, etc.)	ALL
<b><u>STEP 5</u></b>	
7. CONFIRM ALL FRIENDLY UNITS IN A CLOCKWISE DIRECTION; IN TURN, THE STAFF ANNOUNCES IF ITS BOS ELEMENTS ARE CLEAR, UNKNOWN, OR DANGER CLOSE.	ALL
8. IF ALL CLEAR; ANNOUNCE ALL CLEAR TO TOC.	BATTLE CPT
9. IF NOT CLEAR, RECORD AND CONTINUE TO OBTAIN STATUS ON APPLICABLE ELEMENT(S); ANNOUNCE THE ELEMENT(S) NOT CLEAR OR DANGER CLOSE.	BATTLE CPT, APPLICABLE STAFF
<b><u>STEP 6</u></b>	
10. ADVISE COMMANDER OF UNITS WITHIN THE DOWNWIND FAN AND RECOMMEND APPROPRIATE INCREASE IN MOPP POSTURE; OBTAIN COMMANDER'S DECISION.	BATTLE CPT/CHEMO
11. ANNOUNCE COMMANDER'S DECISION TO STAFF AND EXECUTE TO ALL SUBORDINATE ELEMENTS.	BATTLE CPT APPLICABLE STAFF

#### STEP 7

- |  |                                |
|--|--------------------------------|
| 12. SEND NEW FRAGO IF COMMANDER DECIDES TO CHANGE CURRENT CONCEPT OF OPERATIONS.   | BATTLE CPT                     |
| 13. ALERT, COORDINATE, RECONFIRM ANY COMMITMENT OF BRIGADE ASSETS IAW CURRENT OPORD/FRAGO (Anticipate MEDEVAC, decon assets, maintenance evacuation, MOPP exchange, resupply, routes, NBC recon assets, etc.). | BATTLE CPT<br>APPLICABLE STAFF |

#### STEP 8

- |  |     |
|--|-----|
| 14. MONITOR AND BATTLETRACK INCOMING BDA AND EXTENT OF CONTAMINATION; DETERMINE THE NEED FOR NBC RECON MISSIONS; ADVISE COMMANDER ON ANY NEW DEVELOPMENTS. | ALL |
|--|-----|

#### STEP 9

- |   |     |
|---|-----|
| 15. IN A CLOCKWISE DIRECTION, IN TURN ADVISE BATTLE CPT ON IMPACT OF CURRENT ATTACK/THREAT ON CURRENT/FUTURE OPERATIONS (i.e. units operating in contaminated areas with increased MOPP posture). | ALL |
|---|-----|

#### STEP 10

- |  |                         |
|--|-------------------------|
| 16. ANALYZE WHETHER CONTACT CONFIRMS ANY CCIR; ANALYZE ENEMY COMMANDER'S INTENT FOR USE OF CHEMICALS AND REVISE NAIs/PIRs AS NEEDED; NOTIFY COMMANDER. | BATTLE CPT/S2/<br>CHEMO |
|--|-------------------------|

#### STEP 11

- |   |                         |
|---|-------------------------|
| 17. ADVISE COMMANDER ON POTENTIAL IMPACTS ON CURRENT/FUTURE OPERATIONS, ENEMY COMMANDER'S INTENT, AND INCREASED THREATCON IF APPLICABLE (SEE NOTE 1). | BATTLE CPT/S2/<br>CHEMO |
| 18. OBTAIN COMMANDER'S DECISION TO CHANGE CURRENT CONCEPT OF OPERATIONS AND RAISE THREATCON IF REQUIRED; ANNOUNCE TO STAFF.                           | BATTLE CPT              |
| 19. SEND UPDATED/NEW FRAGO IF APPLICABLE.   | BATTLE CPT              |

#### STEP 12

- |   |               |
|---|---------------|
| 20. ANALYZE WHETHER ATTACK/THREAT CONFIRMS ANY CCIR; NOTIFY COMMANDER.  | S2            |
| 21. REVIEW PATTERN ANALYSIS; UPDATE SITMAP AND SITUATIONAL TEMPLATE; ADVISE COMMANDER ON ANTICIPATED ENEMY REACTION; NOTIFY SUBORDINATE UNITS AND, IF APPLICABLE, ADJACENT UNITS; UPDATE BDA CHART. | BATTLE CPT/S2 |

**NOTE 1:** Although not doctrinally mandated, establishing an NBC threat warning system SOP has greatly assisted units at JRTC. The SOP should address the following to be effective:

- NBC Threatcon (i.e. white, green, amber and red)
- Probability of Attack (i.e. not possible, possible, probable and imminent)
- Criteria/Indicators for a given Threatcon
- Action required by a given Threatcon

## BIBLIOGRAPHY

- Brezovic, C. P., G. A. Klein, and M. Thordsen. Decision Making in Armored Platoon Command. (ARI Research Note 90-51). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1990.
- Fallesen, J. J., C. F. Carter, Jr., M. S. Perkins, R. R. Michel, J. P. Flanagan, and P. E. McKeown. The Effects of Procedural Structure and Computer Support Upon Selecting a Tactical Course of Action. (ARI Technical Report 960). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1992.
- Fallesen, J. J., J. W. Lussier, and R. R. Michel. Tactical Command and Control Process. (ARI Research Product 92-06). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1992.
- Fallesen, J. J., and R. R. Michel. Observation on Command and Staff Performance During CGSC Warrior '91. (ARI Working Paper LVN-91-04). Fort Leavenworth, KS: U.S. Army Research Institute for the Behavioral and Social Sciences, 1991.
- Geva, N. Executive Decision-Making Processes During Combat: A Pretest of the Content Analysis Schema. (030/1-02-88). Zikhron Ya'akovi, Israel: Israeli Institute for Military Studies, 1988.
- Grossman, Jon. Battalion-Level Command and Control at the National Training Center. (MR-496-A). Santa Monica, CA: RAND, Arroyo Center, 1994.
- Halpin, S. M., and S. D. Keene. Desert Storm Challenges: An Overview of Desert Storm Survey Responses. (ARI Research Report 1633). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1993.
- Klein, G. A., and R. Calderwood. Investigations of Naturalistic Decision Making and the Recognition-Primed Decision Model. (ARI Research Note 90-59). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1990.
- Lussier, J. W., and D. J. Litavec. Battalion Commanders Survey: Tactical Commanders Development Course Feedback. (ARI Research Report 1628). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1992.
- Lussier, J. W., and R. E. Solick, and S. D. Keene. Experimental Assessment of Problem Solving at the Combined Arms and Services Staff School. (ARI Research Note 92-52). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1992.

- Michel, R. R. Historical Development of the Estimate of the Situation. (ARI Research Report 1577). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1990.
- Michel, R. R., and S. L. Riedel. Effects of Expertise and Cognitive Style on Information Use in Tactical Decision Making. (ARI Research Report 806). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1988.
- Olmstead, J. A. Battle Staff Integration. (IDA Paper P-2560). Alexandria, VA: Institute for Defense Analyses, 1992.
- Pankey, James D., Chief, Team C, CTAC. Interview by author, 24 April 1995, Fort Leavenworth, Kansas.
- Thordsen, M. L., J. Galushka, G. A. Klein, S. Young, and C. Brezovic. A Knowledge Elicitation Study of Military Planning. (ARI Technical Report 876). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1990.
- Thordsen, M. L., G. A. Klein, R. Michel, and E. Sullivan. Methods for Providing Direct Feedback About Decision Processes for Command and Control Classroom Exercises. (ARI Research Note 91-20). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1991.
- U.S. Army. FM 6-20-10, Tactics, Techniques, and Procedures for the Targeting Process. Washington, DC: Department of the Army, 1994.
- U.S. Army. FM 101-5 (draft), Command and Control for Commanders and Staff. Washington, DC: Department of the Army, 1993.
- U.S. Army. ST 101-5, Command and Staff Decision Processes. Fort Leavenworth, KS: Command and General Staff College, 1994.

INITIAL DISTRIBUTION LIST

1. COL Matthew P. Belford  
Commander  
Operations Group B, BCTP  
Fort Leavenworth, KS 66027-6900
2. Combined Arms Research Library  
U.S. Army Command and General Staff College  
Fort Leavenworth, KS 66027-6900
3. LTC Allen Bishop  
SETAF, Unit 31401  
APO AE 09630
4. MAJ Tom Bowe  
566B Conner Loop  
West Point, NY 10996
5. MAJ David Clark  
HHC, 2-72 AR  
Unit 15084  
APO AP 96224-0345
6. Defense Technical Information Center  
Cameron Station  
Alexandria, VA 22314
7. LTC (Ret) Billy D. Farris  
Box 118  
Lone Star, TX 75668
8. COL B. Ray Fitzgerald  
Senior Observer/Controller  
Brigade C2  
Fort Polk, LA 71459
9. MAJ Doug Friedly  
128 NE Angus  
Lawton, OK 73507
10. MAJ Mark Johnstone  
1605 Holman  
Leavenworth, KS 66048
11. CPT Allen Kelly  
117 Baltzell Ave  
Fort Benning, GA 31905

12. MAJ Larry Kinde  
3-S Hibben  
Faculty Road  
Princeton, NJ 08540
13. MAJ Mike Lentz  
5403B Anderson Court  
Fort Polk, LA 71459
14. MAJ Donald Lash  
1325 MPC  
Unit 22419 GAFSC  
APO AE 09069
15. Ernest G. Lowden, Ed.D.  
Office of Evaluation and Standardization  
USACGSC  
Fort Leavenworth, KS 66027-6900
16. MG Jack P. Nix, Jr.  
Commander  
USA SETAF  
Unit 31401, Box 5  
APO AE 09630
17. LTC James D. Pankey  
Cheif, Team C, CTAC  
Fort Leavenworth, KS 66027-6900
18. MAJ Baron Powell  
DLRO  
Fort Leavenworth, KS 66027-6900
19. LTC Stephen Tyler  
DJACO  
Fort Leavenworth, KS 66027-6900
20. MAJ Andrew Yee  
770 Ashfield Drive  
Fayetteville, NC 28314